



J693

Operator's Manual

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Revision: B

Agency Compliance and Approvals:



UL1950 Information Technology Equipment
C22.2 No. 950-M93



EN60950

For 230 Volt Operation (Europe): Use a cord set, marked "HAR," consisting of a min H05VV-F cord which has a minimum 0.75 square mm diameter conductors, provided with an IEC 320 receptacle and a male plug for the country of installation rated 6A, 250V

Für 230 Volt (Europa): Benützen Sie ein Kabel, das mit "HAR" markiert ist, bestehend mindestens aus einem H05VV-F Kabel, das mindestens 0,75 Quadratmillimeter Drahtdurchmesser hat; sowie eine IEC320 Steckdose und einen für das Land geeigneten Stecker, 6A, 250 Volt.



As an Energy Star Partner, the manufacturer has determined that this product meets the Energy Star guidelines for energy efficiency.



The manufacturer declares under sole responsibility that this product conforms to the following standards or other normative documents:

EMC: EN 55022 (1993) Class B
EN 50024 (1998)
EN 45501 (1992)

Safety: This product complies with the requirements of EN 60950/All:1997



Gost-R

FCC: This device complies with FCC CFR 47 Part 15 Class A.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions in this manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Important Safety Instructions:

This printer has been carefully designed to give you many years of safe, reliable performance. As with all electrical equipment, there are some basic precautions you should take to avoid hurting yourself or damaging the printer:

- Before using the printer, carefully read all the installation and operating instructions.
- Observe all warning instruction labels on the printer.
- Install the printer on a flat, firm, solid surface.
- To protect your printer from overheating, make sure all openings on the printer are not blocked.
- Do not place the printer on or near a heat source.
- Do not use your printer near water, or spill liquid into it.
- Ensure that your power source matches the rating listed of your printer. If unsure, check with your dealer or local Utility provider.
- Do not place the power cord where it will be stepped on. If the power cord becomes damaged or frayed, replace it immediately.
- Do not insert anything into the ventilation slots and openings on the printer.
- Use a qualified, trained service technician should the printer ever need repair.

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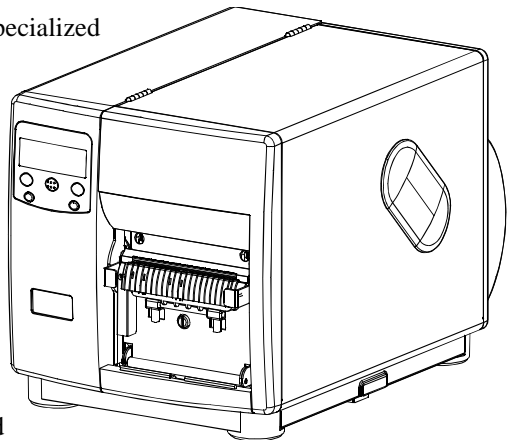
Glossary of Terms

1 Printer Overview

1.0 About this Printer

Congratulations on your purchase of a new J693 printer. The J693, hereafter referred to as ‘the printer’, blends the rugged durability of cast-frame construction with other innovative design features to redefine the standard in industrial thermal printers.

The printer incorporates highly specialized electronics, including a powerful 32-bit processor and up to 8 megabytes of on-board memory. Control and program changes can be made smoothly, with most functions accessible through either the front panel or labeling software program. The user-friendly printing concept is taken a step further with its quick-load media design, easily added application upgrades, and modularly installed options.



This manual provides all the information necessary to operate the printer on a daily basis. To print labels or tags simply refer to the instructions included with the software you have chosen to create the labels. If you wish to write a custom program, a copy of the *Programmer's Manual* is included on the Accessories CD.

To meet all of your printing needs this unit is easily configurable. The following subsections list the standard and optional features, including the requirements to upgrade the printer.

1.0.1 Standard Features

To meet all of your printing needs this unit is easily configurable. This section lists the available standard and optional hardware features.

This printer offers the following standard features:

Printing

- 203 Dots Per Inch
- Thermal Transfer Printing
- On-Demand and Batch Printing
- Rotating Label Hub
- Simple Label Loading
- Label Tear Bar
- Peel and Present Mechanism
- Internal Label Rewinder

Interfaces

- RS-232 Serial Interface
- IEEE 1284 Compliant Parallel Interface

Memory

- 1MB Flash Programmable Downloadable Memory
- 8MB SDRAM

Operational

- 2 X 20 Character, Liquid Crystal Display (LCD)
- EFIGS (English, French, Italian, German, and Spanish) display languages
- AGFA Scalable font engine with CG Triumvirate Scaleable and CG Triumvirate Bold Condensed Font
- Printhead Resistance Verification

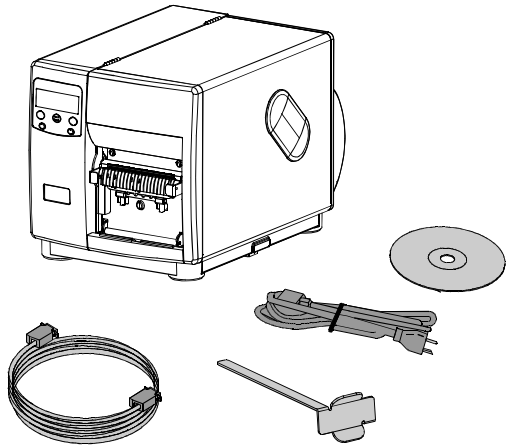
2

Getting Started

2.0 Inspection

After removing the printer from the packaging material, check the contents of the package. In addition to this manual, the following items should be included:

- Printer
- Power Cord
- Accessories CD
- Serial or interface cable
- Label roll
- Rewinder Clasp



3

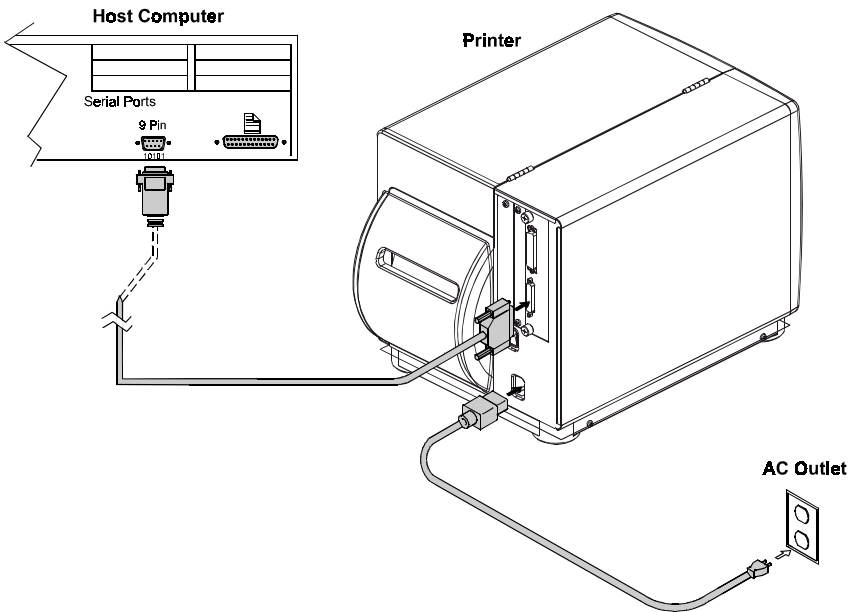
Setting Up the Printer

3.0 Installing the Printer

This section explains how to connect and load the printer with media and ribbon.

Note: When connecting the AC Power Cord or data cables to the printer, ensure the Power On/Off Switch is in the 'Off' position.

Connect the AC power cord to the receptacle located on the back of the printer, then plug the cord into a properly grounded outlet.



3.0.1 Communications Interfacing

Using a data detection process, the interface selection occurs automatically in the printer. At power-up, the printer begins monitoring the interface ports for activity. When the host transmits data, the printer port detecting this data is set 'active' and remains active as long as data flow continues. Once the received data flow stops and the Host Timeout Value (see Section 4.1.5) is exceeded, the detection process will be repeated; in addition, should the data flow stop before a complete label format is received, the format will be ignored and must be sent to the printer again.

Note: To change an active port immediately, cycle the printer power 'On' and 'Off'.

Serial Port:

The serial port interface supports RS-232C and, if equipped, RS-422 communications. The following list of printer serial port settings are menu selectable and must be set to match the host computer serial port settings; see Section 4.1.5.

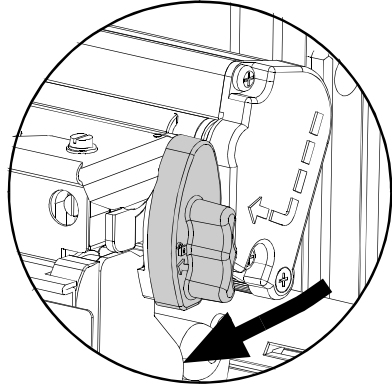
- Baud Rate (communication speed)
- Word Length
- Word Parity
- Number of Stop Bits
- Handshaking Protocol

In addition to these settings, the serial interface cable must have specific pin configuration (pin-out) for proper data exchange (contact your salesperson for ordering information).

3.1 Loading Media

The following procedures explain the preliminary label loading steps.

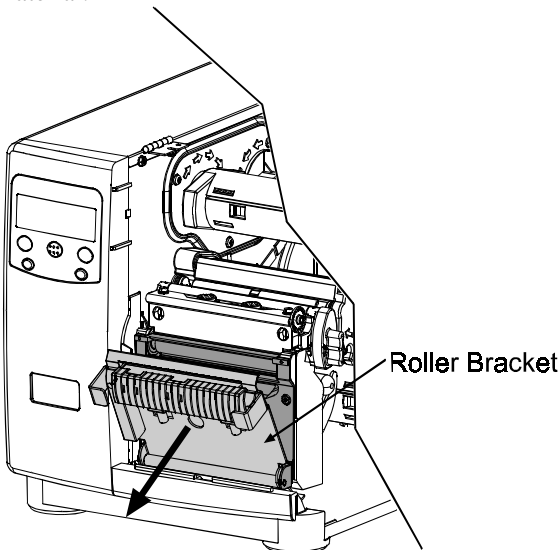
- 1 Raise the Access Cover.
- 2 Rotate the Printhead Latch forward to raise the printhead.



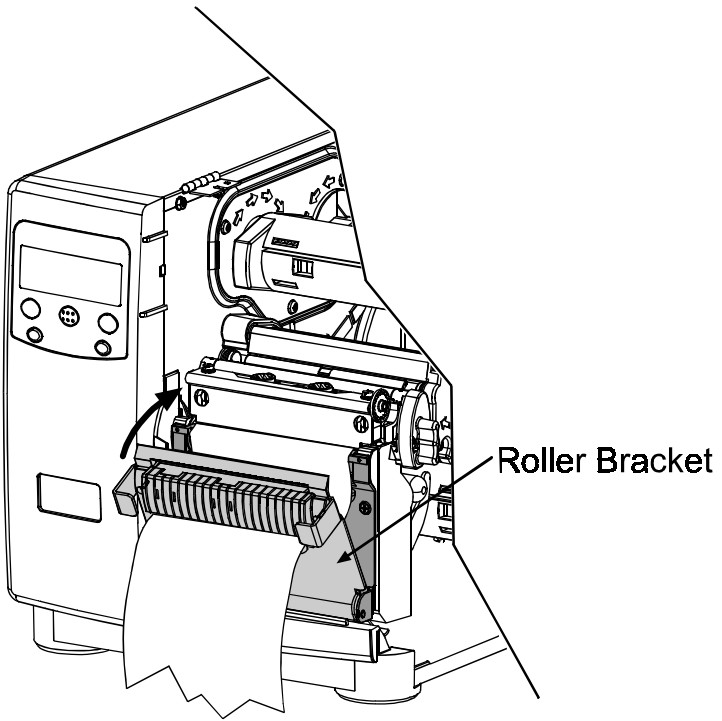
- 3 Slide the Label Guide out away from the frame and then lower it to the down position.

Note: In this left-justified printer, always place the labels against the backstop when loading.

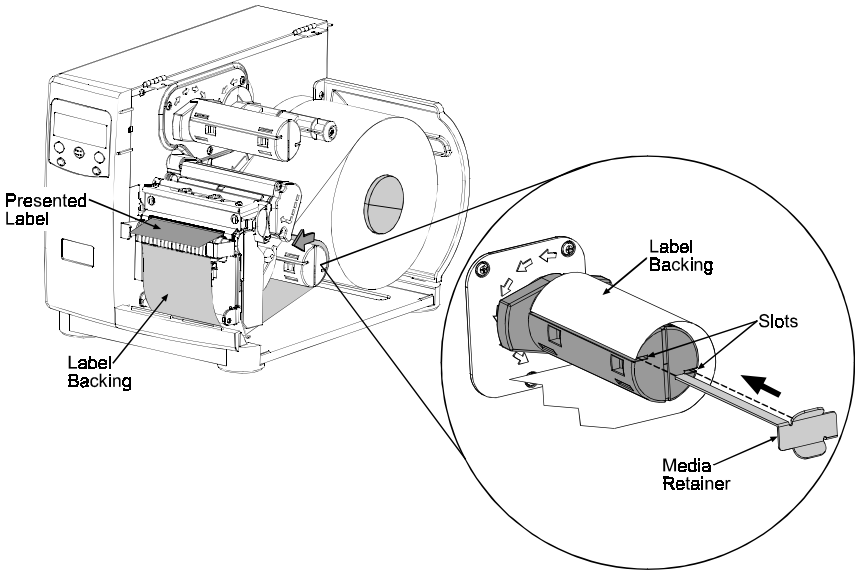
- 4 Pull outward on the Roller Bracket and allow it to swing down.
- 5 Load labels and advance approximately 20 inches of labels from the front of the printer. Remove the labels from the entire length, leaving only the backing material.



- ⑥ Route the backing material through the Roller Bracket as shown. Then raise the Roller Bracket up to its latched position.



- ⑧ Route the Label Backing back to, and around the Rewind Hub, as shown.
- ⑨ Insert the leading edge of the Label Backing into the Slot on the Rewind Hub and then insert the Label Retainer into the Slot on the Rewind Hub. Rotate the Rewind Hub to remove the slack in the Label Backing. Be sure the printhead latch is down and in the locked position.



☞ After finishing, close the Access Cover and then push and hold the FEED key for four seconds to secure the backing material and calibrate the label TOF.

Label Backing Removal:

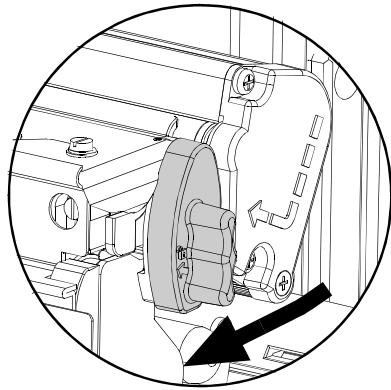
Grasp the used backing on the Rewind Hub, and while gently pulling out on the hub, compress the hub and pull off the backing.

3.3 Loading Ribbon

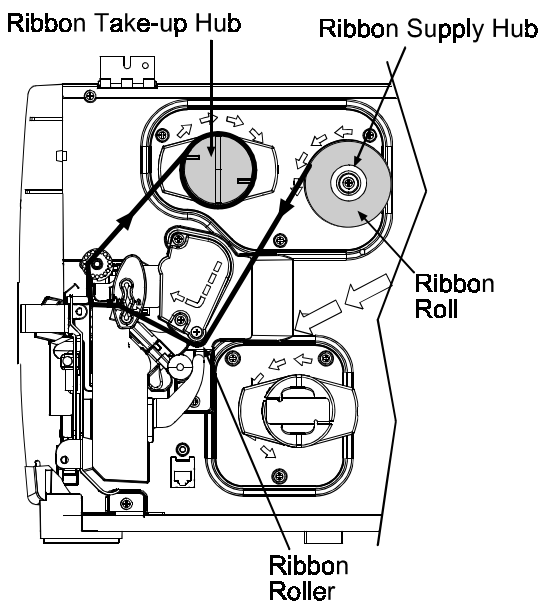
Note: Always use ribbon slightly wider than the label backing material; this helps protect against printhead wear. Use only Pitney Bowes ribbons and labels.

To produce an image on the label, thermal transfer labels requires ribbon. Ribbon types are available with the 'ink' layer on the outside (coating side out) or with the 'ink' layer on the inside (coating side in). These types cannot be interchanged in the printer. Arrows on the Ribbon Supply Hub are used to indicate the correct direction of ribbon travel (see the next page for examples). To load a ribbon:

- 1 Raise the Access Cover.
- 2 Rotate the Printhead Latch forward to raise the printhead.



- ③ Mount the ribbon so that it is dispensed in the appropriate direction for the ribbon type.
- ④ Slide the ribbon on completely to rest against the flange.
- ⑤ Route the ribbon under the Ribbon Roller then out the front of the printer.
- ⑥ Continue routing the ribbon up to and around the Ribbon Take-Up Hub, as shown. Wind the ribbon around several times in a clockwise direction to secure it in place.
- ⑦ Lower the printhead and rotate the Printhead Latch back to the locked position. Close the Access Cover.
- ⑧ With the printer 'On' press and hold the FEED button for three seconds to position the labels for printing; see Section 5.2 for details.



Ribbon routing path

Ribbon Removal:

Pull the empty core from the Ribbon Supply Hub and discard it. Next, grasp the used ribbon on the Ribbon Take-Up Hub, while gently pulling out on the hub, compress the hub to pull off the used ribbon.

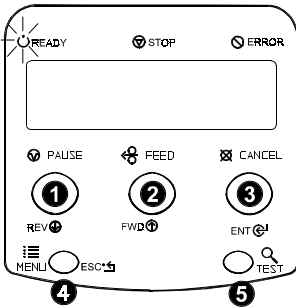
4

Using the Front Panel

4.0 Operating the Front Panel

The front panel is equipped with five keys, 3 indicator lights and a Liquid Crystal Display (LCD). The key functions differ depending upon the selected mode of the printer. The selectable modes are Ready, Menu and Quick Test.

4.0.1 Ready Mode: Normal Operation (Ready Light 'On')



1 PAUSE

The PAUSE key temporarily suspends printing. Pressing again returns the printer to normal operation.

2 FEED

The FEED key advances one label, and clears any corrected faults.

Pressing and holding for 4 seconds will reset the expected label length for gap and reflective modes.

3 CANCEL

The CANCEL key 'pauses' the printer and then prompts for confirmation. If yes, the current job is cancelled. The printer remains paused.

Pressing and holding for 4 seconds will reset the printer and clear temporary host settings (soft reset).



4 MENU

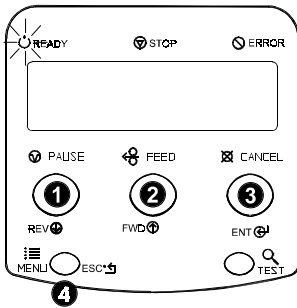
The MENU key toggles between the Ready and Menu Modes.

In the Ready mode, pressing and holding 4 seconds will change the display contrast.

5 TEST

The TEST key enters (or exits) the Quick Test Menu.

4.0.2 Menu Mode: Configuration (Ready Light ‘Flashing’)



❶ REV ⬇️

The DOWN ARROW key scrolls to the previous menu item on the same menu level. It also, decrements numerical values in most menu selections.

❷ FWD ⬆️

The UP ARROW key scrolls to the next menu item. It also increments numerical values in most menu selections.

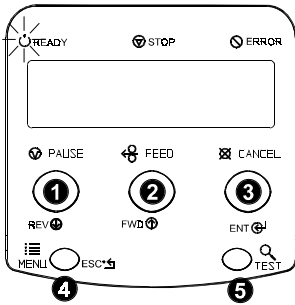
❸ ENT ↵

The ENTER key selects the function or displayed value (selection is indicated with an ‘*’ or ‘§’ for bootables which require a reset to become effective). It also moves between selections in multiple parameter fields.

❹ ESC ⬅️

The ESCAPE key moves to the previous menu level, and finally back to the READY mode.

4.0.3 Quick Test Mode: Print Test Labels



1 REV

The DOWN ARROW key scrolls to the previous test function.

2 FWD

The UP ARROW key scrolls to the next test function.

3 ENT

The ENTER key will change the selected test label quantity of 2, 100, 1000, or 9999 (except the 'Configuration Label', this quantity is always one). Holding down the key scrolls quantities.

4 ESC

The ESCAPE key will exit the Quick Test Mode without printing.

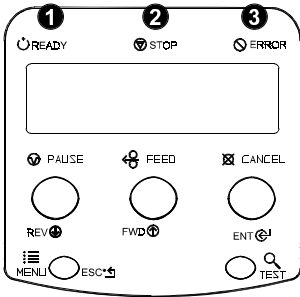
5 TEST

The TEST key will print the selected test label at the selected quantity.

During test label printing, this key can also perform as a cancel key (the printer will prompt for confirmation before cancellation occurs).

Notes: The test functions are disabled while processing data from communications interfaces until the Host Timeout value expires.

4.0.4 Indicator Lights



1 READY

'On' indicates READY Mode.

'Slow Flashing' indicates Menu Mode.

'Fast Flashing' indicates data is being received and processed.

2 STOP

'On' indicates a 'Paused' state.

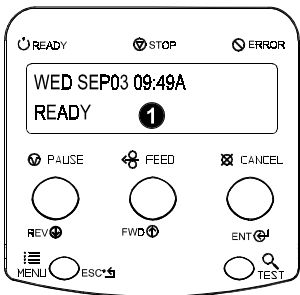
3 ERROR

'Slow Flashing' indicates a *Warning*.

'Fast Flashing' indicates a *Fault*.

See Section 6.1 for a list of the display messages.

4.0.5 LCD (Display)



1 Liquid Crystal Display

The display provides several types of information:

- Following a brief power-up sequence, the READY message.
- The time and date, if the printer has received it from one of the following: the host, the front panel setting, or the Time and Date option.
- A label counter during a batch print job.
- Any prompt, condition, downloading, warning, or fault message.
- The Menu System when in the Menu Mode.

4.0.6 Resetting the Printer

Depending upon the method used, there are three reset levels possible:

4.0.6.1 Soft Reset

To reset the printer and clear any temporary host settings:

- ➊ With the printer 'On', press and hold the CANCEL key for approximately four seconds.

4.0.6.2 Level 1 Reset

To return the printer to the factory default settings:

- ➊ Turn 'Off' the printer.
- ➋ Press and hold the PAUSE and CANCEL keys while turning 'On' the printer; continue to depress the keys until the 'SYSTEM RESET' message flashes.

Note: This reset can also be executed using the menu system: System Settings/Set Factory Defaults. See Section 4.1 for a listing of the factory default settings.

4.0.6.3 Level 2 Reset

To return the printer to the factory default settings, and clear all the calibration and adjustment parameters:

- ➊ Turn 'Off' the printer.
- ➋ Press and hold the PAUSE, FEED, and CANCEL keys while turning 'On' the printer; continue to depress the keys until the 'SYSTEM RESET' message flashes.

Note: After executing a Level 2 Reset, both Ribbon and Media Calibrations must be performed; see Sections 5.1 and 5.2. See Section 4.1 for a listing of the factory default settings.

4.1 Navigating the Menu System

Printer operation can be controlled through the user interface, allowing the operator access to these six menu system branches:

- Media Settings
- Print Control
- Printer Options
- System Settings
- Communications
- Diagnostics

While in the menu system, the current selection will be indicated with the ‘*’ symbol next to the displayed item on the LCD, and selections designated with the ‘§’ symbol will require a printer reset before becoming effective. Changes made can be saved so that, in the event that power is lost or removed, the new settings will be retained. A reset will be automatically invoked when exiting the menu system and answering ‘Yes’ to the ‘Save Changes’ prompt.

The same functional commands from the host computer may, in some cases, override the printer’s menu settings. In addition, as a security feature for the prevention of accidental or unauthorized changes, the menu system has a password protection feature.

Note: In the following subsections, the factory default settings are denoted with the ‘◇’ symbol. Selections denoted with the ‘◆’ symbol can only be changed through the menu system - all other selections can be overridden by host software commands. Consult the *Programmer’s Manual* for specific information.

(Continued next page)



From Ready Mode, press the **MENU** key to enter the Menu Mode. Depending upon the configuration of the printer, the following is a list of the possible Enter and Exit Prompts.

MENU MODE	<i>Enter/Exit Prompt Description:</i>
ENTER PASSWORD 0 0 0 0	<i>You are attempting to enter the Menu Mode. Security has been enabled and now the correct user-definable password is required for access the Menu Mode functions.</i>
KEEP HOST CHANGES? ENTER = YES	<i>You are now entering the Menu Mode. Host commands have affected the configuration of the printer. Pressing ENTER will save these changes; otherwise, the printer will revert to previously saved settings.</i>
SAVE CHANGES? ENTER = YES	<i>You are now exiting the Menu Mode, but have made changes to the printer's settings. Pressing ENTER will reconfigure your printer according to these changes; otherwise, the printer will revert to previously saved settings.</i>

Note: While in the Menu Mode, the printer will stop processing new DPL (or bitmapped) data.

4.1.1 Media Settings

MEDIA TYPE	<i>Selects a print method.</i>
DIRECT THERMAL	<i>For use with heat sensitive media.</i>
◇ THERMAL TRANSFER	<i>For use with media requiring a ribbon to create an image.</i>
SENSOR TYPE	<i>Selects the top-of-form (TOF) sensing method for the media.</i>
GAP	<i>The printer recognizes the TOF by sensing gaps in the media.</i>
◇ CONTINUOUS	<i>No TOF sensing. The user must use the LABEL LENGTH setting to determine TOF.</i>
REFLECTIVE	<i>The printer recognizes the TOF by sensing reflective (black) marks on the underside of media.</i>
LABEL LENGTH ◇ 04.00in (0-99.99)	<i>For use with continuous media. Label length is used to determine the TOF when 'Sensor Type-Continuous' is selected.</i>
MAXIMUM LABEL LENGTH ◇ 16.00in (0-99.99)	<i>Sets the maximum length between TOF marks (gap or black stripe). If this limit is exceeded, a top of form fault is declared.</i>
SENSOR CALIBRATION ◆	<i>Adjusts the printer to sense your media.</i>
PERFORM CALIBRATION	<p><i>The user follows steps to allow the printer to calculate the empty, gap or mark, and paper values to set the media sensor.</i></p> <div style="border: 1px solid black; padding: 5px;"> <p>✔ Note: <i>Firmware versions 3.04 and greater – After successful completion, these parameters are automatically stored for future sessions.</i></p> </div>
ADVANCED ENTRY	<i>The user directly inputs the best values to adjust the media sensor.</i>
SENSOR LEVELS	<i>Sets threshold values for the media sensor parameters. Entry for paper, gap/mark, and empty thresholds.</i>
SENSOR GAIN	<i>Observe A/D reading and set SENSOR GAIN. Adjusts the sensitivity of the sensor for custom label stock.</i>

4.1.2 Print Control

HEAT ◆10 (0-30)	<i>Controls the printhead ‘burn-time’; see Section 2.1.1 for more on print quality control.</i>
PRINT SPEED	<i>Controls the rate of label movement during the printing process; see Appendix C.</i>
FEED SPEED	<i>Controls the rate of label movement between printing areas; see Appendix C.</i>
REVERSE SPEED	<i>Controls the rate of label movement during backup positioning for start of print, cutting or present distance; see Appendix C.</i>
ROW OFFSET ◆00.00in (0-99.99)	<i>Shifts the vertical start of print position. This is the user setting for row adjustment.</i>
COLUMN OFFSET ◆00.00 in (0-99.99)	<i>Shifts the horizontal, left-justified start of print position to the right. Does not shift label width.</i>
LABEL WIDTH	<i>Sets the maximum limit for the printable surface width. Images or data beyond this limit will not print; see Appendix C.</i>
PRESENT DISTANCE ◆0.72 in (0-4.00)	<i>Specifies an additional amount to advance the label after printing. When the next label format is received, the printer backfeeds to the start position. Only the last label of the batch will be presented if the present sensor is not enabled.</i>
CUSTOM ADJUSTMENTS ◆	<i>These factory adjustments independently change listed parameters, compensating for slight mechanical differences sometimes evident when multiple printers share the label formats.</i>
DARKNESS XX (1-64)	<i>Controls the printhead strobe time to fine-tune the HEAT setting.</i>
ROW ADJUST XXX DOTS (0-128)	<i>Shifts the vertical start of print position upward in dots to fine-tune the ROW OFFSET setting; see Appendix C.</i>
☑ Note: A Positioning Calibration must be performed before this parameter takes effect; see Section 5.1.	
COLUMN ADJUST XXX DOTS (0-128)	<i>Shifts both the horizontal start of print position and the LABEL WIDTH termination point to the right in dots to fine-tune the COLUMN OFFSET setting; see Appendix C.</i>
PRESENT ADJUST XXX DOTS (0-128)	<i>Adjusts the label stopping position in dots to fine-tune the PRESENT DISTANCE setting; see Appendix C.</i>

4.1.3 Printer Options

MODULES	<i>The physical presence of the respective memory module must be detected to show the module function selections for that module in the menu system.</i>
PRINT DIRECTORY	<i>Prints a label directory of all available modules, the available space on these modules, the files present, and the type of module and files.</i>
PRINT FILE	<i>The user may select from a list of available files for sample printing.</i>
FORMAT MODULE	<i>The user may select from a list of available modules for formatting – all data will be erased.</i>
DELETE FILE	<i>The user may select from a list of available files for deleting. Bytes will NOT be retrieved until the module that contained the deleted file is packed.</i>
PACK MODULE	<i>Packing the module removes files marked as deleted and defragments existing file structures to recover space.</i>
PRESENT SENSOR	<i>Used for on-demand label dispensing, where a printed label blocking the sensor will inhibit further printing until removed. The physical presence of the Present Sensor must be detected to show the ENABLE/DISABLE selections in the menu system.</i>
❖ ENABLED	<i>Enables the sensor for on-demand printing.</i>
DISABLED	<i>Disables the sensor.</i>
NOT INSTALLED	<i>No sensor is detected.</i>
CUTTER	<i>Physical presence of a cutter must be detected to show the ENABLE/DISABLE selections in the menu system.</i>
ENABLED	<i>Enables the cutter for label cutting.</i>
DISABLED	<i>Disables the cutter.</i>
❖ NOT INSTALLED	<i>No cutter is detected.</i>

(Continued next page)

Printer Options (continued)

GPIO PORT	<i>The physical presence of the optional GPIO port must be detected to show the selections in the menu system.</i>
GPIO	<i>Instructs the printer to update the output signals and to wait for the Start of Print Signal to print a label.</i>
ENABLED	<i>Yes</i>
◇DISABLED	<i>No</i>
END OF PRINT	<i>Defines the operation of the printer's End of Print signal as sent to the applicator. This signal indicates that the printer has completed the print cycle.</i>
LOW STATUS	<i>A steady Low (0 VDC) during the print cycle.</i>
HIGH STATUS	<i>A steady High (5 VDC) during the print cycle.</i>
LOW PULSE	<i>A Low Pulse (0 VDC for 30 ms) at the end of print.</i>
HIGH PULSE	<i>A High Pulse (5 VDC for 30 ms) at the end of print.</i>
DISABLED	<i>No indication.</i>

4.1.4 System Settings

INTERNAL MODULE ✧1024 KB	<i>Sets the number of 1K blocks allocated for the internal RAM 'D' module. Available memory dependent upon model; see Appendix C.</i>
DEFAULT MODULE ✧D	<i>Sets the default module used to store files when no module is specified; see Appendix C.</i>
SCALEABLE FONT CACHE ✧0312 KB	<i>Sets the number of 1K blocks allocated for the scaleable font engine. Available memory dependent upon model; see Appendix C.</i>
SYMBOL SET	<i>Selects the code page used to print single byte fonts unless otherwise specified in DPL, see the Programmer's Manual.</i>
✧PC_850 MULTILINGUAL	<i>61 selectable sets, see the Programmer's Manual.</i>
TIME AND DATE	<i>Allows the user to set Time and Date.</i>
MEDIA COUNTERS	<i>Internal record of inches printed and time in use.</i>
ABSOLUTE COUNTER	<i>Shows the number of inches printed and number of hours the printer has been powered 'On' since being set at the factory. Not resettable by the user.</i>
RESETTABLE COUNTER	<i>The number of operational hours and inches printed from the date last reset. User may reset.</i>
RESET COUNTER	<i>Resets the resettable counters to zero.</i>
PRINT CONFIGURATION	<i>Prints the effective configuration of the system. In addition, if settings were changed that require a reset to become effective, this will be indicated with the '\$' symbol. A '•' symbol next to the printed item indicates that it was changed via the host but not saved in non-volatile memory.</i>

(Continued next page)

System Settings (continued)

CONFIGURATION LEVEL	<i>To upgrade the application (resident software) of the printer, the hardware and software compatibility levels must match for the update to be accepted. This information is displayed here and can also be found printed on the configuration label.</i>
PRINTER KEY	<i>Each printer has a unique KEY number in the following form:</i> <i>vvvv-wwxx-yyyyyy-zzz</i> <i>where:</i> <i>vvvv – represents the model number of the application loaded</i> <i>wwxx – represents the configuration level</i> <i>ww represents the main board hardware compatibility level</i> <i>xx represents the software compatibility level (see below)</i> <i>yyyyyy – is a manufacturing date code</i> <i>zzz – is a unique time stamp</i>
UPGRADE PRINTER CODE	<i>The application version may only be updated with a configuration level of equal or lesser value than the software level; however, the printer's software compatibility level can be increased by purchasing and entering the proper upgrade code here.</i>

(Continued next page)

System Settings (continued)

SET FACTORY DEFAULTS	<i>Parameters in this menu listing with the '◇' symbol are the designated defaults.</i>
SET FACTORY DEFAULTS	<p><i>Overwrite the current settings with the factory default settings.</i></p> <p><input checked="" type="checkbox"/> Note: The printer will reset automatically. All menu settings will be restored except CUSTOM ADJUSTMENTS and the media and ribbon calibration parameters.</p>
FORMAT ATTRIBUTES	<i>Affects the manner in which overlapping text and graphics are treated as the label is printed. Consult the Programmer's Manual for details.</i>
TRANSPARENT	<i>Intersecting text strings, images, and bar codes will not be printed. (An odd number of overlapping objects will print.)</i>
◇XOR	<i>Intersecting text strings, images, and bar codes print on top of one another.</i>
OPAQUE	<i>Intersecting text strings, images, and bar codes are obliterated by those formatted last. Each character cell is treated as opaque.</i>
IMAGING MODE ◆	<p><i>Instructs the printer whether it can pre-image the label format.</i></p> <p><input checked="" type="checkbox"/> Note: This selection can affect the accuracy of time-stamped labels and label throughput.</p>
◇MULTIPLE LABEL	<i>The printer images multiple labels as memory permits, achieving the fastest throughput; however if time-stamping, the time will reflect the moment the label is imaged rather than when actually printed.</i>
SINGLE LABEL	<i>The printer images the next label only after the previous label has been successfully printed; this single processing provides more accurate time-stamps with a minor cost to label throughput.</i>

(Continued next page)

System Settings (continued)

PAUSE MODE	<i>When enabled, PAUSE MODE suspends printing between each label until the PAUSE key is pressed.</i>
ENABLED	<i>Printer requires operator to press the PAUSE key after each label.</i>
✧DISABLED	<i>Printer completes label batch without pausing between labels.</i>
SECURITY ◆	<i>Provides the user with the ability to password protect all printer settings made through the operator panel.</i>
SELECT SECURITY	<i>Enable or disable the menu system's security feature.</i>
ENABLED	<i>Password protected.</i>
✧DISABLED	<i>No protection.</i>
MODIFY PASSWORD	<i>Modify the password required to access the menu system when security is enabled.</i>
UNITS OF MEASURE	<i>Selects the measurement system in which the system's settings are represented in the menu system and on configuration labels.</i>
METRIC	<i>Metric standard: Lengths in millimeters; Counters in centimeters.</i>
✧IMPERIAL	<i>Inch standard: Lengths and Counters in inches.</i>
DPI EMULATION	<i>Allows users to print files intended for a Prodigy Plus® and Allegro® printers.</i>
200 DOTS PER INCH	<i>Formats emulated for 200 DPI printing.</i>
✧203 DOTS PER INCH	<i>Standard 203 DPI printing.</i>
ALLEGRO EMULATION	<i>Allows users to print files intended for an Allegro® printer.</i>
ENABLED	<i>Row calculation is reduced to 195 DPI, shrinking the label length.</i>
✧DISABLED	<i>Standard 203 DPI formatting.</i>
MENU LANGUAGE ◆	<i>Selects the language in which the menu system messages and configuration label are shown. Only languages that are resident will be available.</i>
✧ENGLISH	<i>English</i>
...	<i>User defined, downloaded language(s).</i>

4.1.5 Communications

SERIAL PORT A◆	<i>Controls Serial Port A communications settings.</i>
BAUD RATE	<i>Determines the serial communication rate.</i>
38400	
28800	
19200	
◆9600	<i>9600 bits per second</i>
4800	
2400	
PROTOCOL	<i>Sets the flow control (handshaking) method.</i>
◆BOTH	<i>Uses both handshaking methods.</i>
SOFTWARE	<i>XON/XOFF</i>
HARDWARE	<i>CTS/DTR</i>
NONE	<i>No flow control is used.</i>
PARITY	<i>Sets Word parity</i>
◆NONE	<i>No parity</i>
ODD	<i>Odd parity</i>
EVEN	<i>Even parity</i>
DATA BITS	<i>Sets Word length</i>
7	<i>Seven bit Word length</i>
◆8	<i>Eight bit Word length</i>
STOP BITS	<i>Sets the number of stop bits</i>
◆1	<i>One stop bit</i>
2	<i>Two stop bits</i>
SERIAL PORT B◆	<i>Same as Serial Port A, for optional wireless connection. If not installed, this displays “NOT INSTALLED” when accessed.</i>
PARALLEL PORT A◆	<i>Controls Parallel Port A communications settings.</i>
PORT DIRECTION	<i>Determines if messages are sent from the printer to the host via the parallel port.</i>
◆UNI-DIRECTIONAL	<i>One-way printer communication.</i>
BI-DIRECTIONAL	<i>Enables IEEE 1284 back-channel operation.</i>
PARALLEL PORT B◆	<i>Same as Parallel Port A, for optional Ethernet connection. If not installed, this displays “NOT INSTALLED” when accessed.</i>

(Continued next page)

Communications (continued)

HOST SETTINGS	<i>Settings which affect all communications with a host.</i>
HOST TIMEOUT ◇10 SEC (1-60)	<i>The number of seconds a communications port must be idle before the printer may process data from a different port. This value is also used to “timeout” an image / label download.</i>
CONTROL CODES ◆	<i>Allows the operator to change the prefix of the commands interpreted by the printer.</i>
◇STANDARD CODES	<i>Hex 01 = SOH command; Hex 02 = STX command; Hex 0D = CR</i>
ALTERNATE CODES	<i>Hex 5E = SOH command; Hex 7E = STX command; Hex 0D = CR</i>
ALTERNATE CODES 2	<i>Hex 5E = SOH command; Hex 7E = STX command; Hex 7C = CR</i>
ALTERNATE CODES 3	<i>Hex 5E = SOH command; Hex 23 = STX command; Hex 0D = CR</i>
FEEDBACK MODE	<i>Returns a Hex 1E, [RS], after each label successfully prints, and a Hex 1F, [US], after each batch of labels is printed.</i>
ENABLED	<i>Feedback characters are sent to the host.</i>
◇DISABLED	<i>No feedback characters are sent.</i>

4.1.6 Diagnostics

HEX DUMP MODE	<i>Most commonly used mode for trouble shooting. Prints data and instructions received from the host rather than interpreting them (see Section 6.2).</i>
ENABLE	<i>Prints raw ASCII data received from the host rather than executing the commands.</i>
◇DISABLE	<i>Executes and prints label formats (normal operating mode).</i>
OPTIONS TESTING	<i>Tests currently installed options</i>
TEST PRESENT SENSOR	<i>Performs a functional test of the Present Sensor circuitry.</i>
TEST CUTTER	<i>Performs a functional test of the optional cutter mechanism and circuitry.</i>
PERFORM TEST 1 TIME	<i>The cutter will cycle 1, 10 or 100 times (user selects). The results of each attempt will be displayed.</i>
TEST	<i>Tests the optional GPIO port, when installed.</i>
MONITOR GPIO INPUT	<i>Performs a functional test of the GPIO input circuitry.</i>
MONITOR GPIO OUTPUT	<i>Performs a functional test of the GPIO output circuitry.</i>
SENSOR READINGS	<i>All Analog Sensor readings displayed</i>
THR TRAN RIBM 24V-> 255 255 255 255	<i>Live sensor values may be viewed. View is toggled with forward and reverse keys. Maximum values are shown here: thermistor sensor, transmissive (gap) media sensor (TRAN is replaced with REFL when SENSOR TYPE is set to reflective), ribbon motion sensor, 24 volt power supply sensor.</i>
<- PS HD RANK 255 255 255	<i>present sensor, head down, printhead ranking resistor.</i>
RIBBON SENSOR LIMITS	<i>Displays ribbon sensor ADC low and high values. A Level 2 reset is required to change these values.</i>
RIBBON ADC LOW HIGH 070 104	<i>Approximate default values are shown here (actual values will vary).</i>

4.2 Understanding the Display Messages





The printer generates and displays four different types of information (if not in the menu system or Quick Test Mode):

- User Prompts and Condition Messages
- Application Update Messages (see Section 5.6)
- Fault Messages (see Section 6.1)
- Warning Messages (see Section 6.1)

4.2.1 The User Prompts and Condition Messages

User Prompts indicate a required user operation. When outside the menu system, Condition Messages indicate a current printer operation or state.

User Prompts and Condition Messages:

Displayed Message	Description	Condition(s)
	The printer is trying to clear a fault condition.	Occurs when the FEED key is pressed after the correction of a fault.
	A calibrated feed operation is being performed.	The FEED key was pressed and held four seconds, or during a label feed when the TOF was expected but the media sensor did not detect one.
	The CANCEL or TEST key was pressed during a batch job.	The current print batch will be cancelled if ENTER is pressed; the remaining labels will not be printed.
	Security protection is enabled on the printer. Provide the correct user-definable password to proceed.	You are attempting to enter Menu Mode; however, a password entry is required for access.


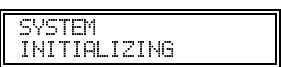


(Continued next page)

User Prompts and Condition Messages (continued):


Displayed Message	Description	Condition(s)
<div style="border: 1px solid black; padding: 2px; width: fit-content;">KEEP HOST CHANGES? ENTER = YES</div>	<p>You are now entering the Menu Mode and existing host changes have affected the menu settings.</p>	<p>Pressing ENTER will save these host changes to the menu; otherwise, the printer will revert to previously saved settings.</p>
<div style="border: 1px solid black; padding: 2px; width: fit-content;">PAUSED</div>	<p>The printer is paused or offline.</p>	<p>The printer is in a paused condition.</p>
<div style="border: 1px solid black; padding: 2px; width: fit-content;">XXXX OF XXXX PRINTING</div>	<p>The print job is being processed.</p>	<p>Batch status indication, updated with each label printed.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><input checked="" type="checkbox"/> Note: If the printer is powered off while labels remain to be printed, printing will resume upon power up.</p> </div>
<div style="border: 1px solid black; padding: 2px; width: fit-content;">READY</div>	<p>READY Mode.</p>	<p>Normal operating mode. The printer is ready to receive and process label formats.</p>
<div style="border: 1px solid black; padding: 2px; width: fit-content;">REMOVE LABEL</div>	<p>The Present Sensor option is enabled and a printed label is awaiting removal.</p>	<p>A label blocks the Present Sensor; remove it to continue printing.</p>

(Continued next page)



User Prompts and Condition Messages (continued):

Displayed Message	Description	Condition(s)
	<p>You are now exiting the menu, but have made changes to the settings of the printer. Pressing 'ENTER' will save these changes; if not, the printer will revert to previously saved settings.</p>	<p>Menu changes have affected the configuration of the printer.</p> <p><input checked="" type="checkbox"/> Note: If changes have been made that require a printer reset, the printer will automatically invoke that reset.</p>
	<p>Normal power-up / soft reset condition.</p>	<p>Follows the 'SYSTEM RESET IN PROGRESS' message after a reset or power-up.</p>
	<p>Normal power-up / soft reset condition.</p>	<p>Occurs when the user resets the printer via the host or Front Panel.</p>
	<p>Printer calibration not set.</p>	<p>Perform calibration. See Section 5.2.</p>

4.3 Printing from the Quick Test Mode





This section explains the functions of the resident Quick Tests, accessible by pressing the  **TEST** key on the Front Panel.

Notes: With the exception of the Configuration Label, all Quick Test labels require 4-inch (102mm) wide media to capture all format information. When using less than full width media, change the Label Width setting to the width of the material to avoid printing on the platen (see Section 4.1.2).

During any Quick Test Label run, pressing the **ESC**  key or the  **TEST** key will stop printing.

4.3.1 Print Quality Label

The Print Quality Label provides an indication of overall print quality at a selected heat and speed setting. Consisting of fence and ladder type compliant bar codes, assorted font sizes and graphic fill patterns, its format can be used to ensure conformance, as well as visual aesthetics. To print a Print Quality Label:

- 1 Press the  **TEST** key.
- 2 Use the **FWD**  key to scroll to 'Print Quality Label'.
- 3 Use the **ESC**  key to select a quantity; see Section 4.0.3.
- 4 Press the  **TEST** key to start printing.






4.3.2 Configuration Label

☑ **Notes:** To print all Configuration Label information, the media cannot be less than 2 inches wide (51mm) and the Label Width setting must match the width of the media being used (see Section 4.1.2).

The Configuration Label content can vary with the application version and model of the printer.





The Configuration Label provides valuable printer database information, as detailed in Section 4.1. To print a Configuration Label:

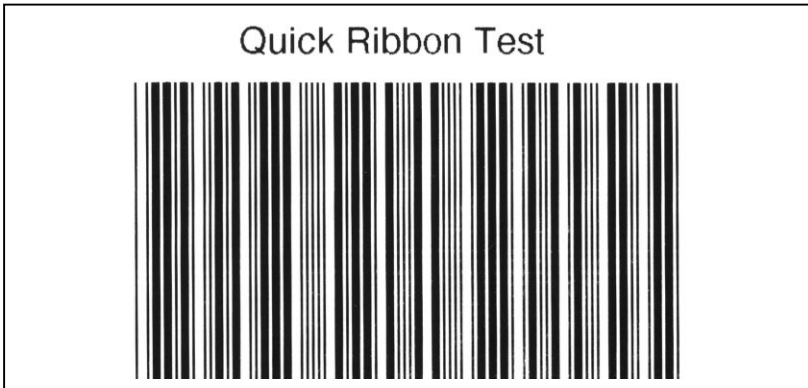
- ❶ Press the  **TEST** key.
- ❷ Use the **FWD**  key to scroll to 'Print Configuration'.
- ❸ Press the  **TEST** key to start printing.

<p>CONFIGURATION DATE NOT SET PRINTER KEY: <small>4212-1999-00300-524</small> APPLICATION VERSION: <small>83-2283-03D 03.04 07/26/2000</small> BOOT LOADER: <small>83-2289-03D X3.04 07/25/2000</small></p> <p>SYSTEM INFORMATION PRINT BUFFER SIZE: <small>381 in.</small> FLASH SIZE: <small>2 MB</small> RAM TEST: <small>PASS</small> OPTIONAL LANGUAGES: <small>NONE</small></p> <p>MEDIA SETTINGS MEDIA TYPE <small>THERMAL TRANSFER</small> SENSOR TYPE <small>GAP</small> LABEL LENGTH <small>04.00 in.</small> MAXIMUM LABEL LENGTH <small>18.00 in.</small> SENSOR CALIBRATION PAPER SENSOR LEVEL <small>72</small> GAP SENSOR LEVEL <small>44</small> EMPTY SENSOR LEVEL <small>72</small> SENSOR GAIN <small>13</small></p> <p>PRINT CONTROL HEAT <small>0</small> PRINT SPEED <small>8.0 in/sec</small> FEED SPEED <small>8.0 in/sec</small> REVERSE SPEED <small>4.0 in/sec</small> ROW OFFSET <small>00.00 in.</small> COLUMN OFFSET <small>00.00 in.</small> LABEL WIDTH <small>4.10 in.</small> PRESENT DISTANCE <small>0.00 in.</small> DARKNESS <small>32</small> ROW ADJUST <small>64 DOTS</small> COLUMN ADJUST <small>0 DOTS</small> PRESENT ADJUST <small>04 DOTS</small></p> <p>PRINTER OPTIONS MODULES A: NOT INSTALLED B: NOT INSTALLED D: FORMATTED F: NOT INSTALLED G: FORMATTED Y: FORMATTED Z: NOT INSTALLED PRESENT SENSOR <small>NOT INSTALLED</small> CUTTER <small>NOT INSTALLED</small> GPIO PORT: <small>NOT INSTALLED</small></p>	<p>SYSTEM SETTINGS INTERNAL MODULE <small>1024 KB</small> DEFAULT MODULE <small>0</small> SCALABEL FONT CACHE <small>312 KB</small> SYMBOL SET <small>PS-850 MULTILINGUAL</small> ABSOLUTE COUNTER <small>4234 in.</small> DATE NOT SET RESETTABLE COUNTER <small>54 in.</small> DATE NOT SET FORMAT ATTRIBUTES <small>XOR</small> IMAGING MODE <small>MULTIPLE LABEL</small> PAUSE MODE <small>DISABLED</small> SELECT SECURITY <small>DISABLED</small> UNITS OF MEASURE <small>IMPERIAL</small> DPI EMULATION <small>263 DOTS PER INCH</small> ALLEGRO EMULATION <small>DISABLED</small> MENU LANGUAGE <small>ENGLISH</small></p> <p>COMMUNICATIONS SERIAL PORT A: BAUD RATE <small>9600 BPS</small> PROTOCOL <small>BOTH</small> PARITY <small>NONE</small> DATA BITS <small>8</small> STOP BITS <small>1</small> SERIAL PORT B: <small>NOT INSTALLED</small> PARALLEL PORT A: PORT DIRECTION <small>UNI-DIRECTIONAL</small> PARALLEL PORT B: <small>NOT INSTALLED</small> HOST SETTINGS: HOST TIMEOUT <small>10 SEC</small> CONTROL CODES <small>STANDARD CODES</small> FEEDBACK MODE <small>DISABLED</small></p> <p>DIAGNOSTICS HEX DUMP MODE <small>DISABLED</small> SENSOR READINGS THRU TRAN RIBB 24V <small>138 183 070 172</small> <small>RS HD RANK</small> <small>007 102 179</small> RIBBON SENSOR LIMITS RIBBON ADC LOW <small>070</small> RIBBON ADC HIGH <small>104</small></p>
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4.3.3 Quick Ribbon Test Label





The Ribbon Test Label features a compliant picket-fence bar code that can be used to verify ribbon and print quality functions. To print a Ribbon Test Label:

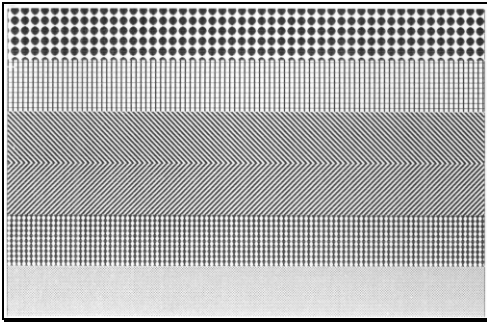
- 1 Press the  **TEST** key.
- 2 Use the **FWD**  key to scroll to 'Ribbon Test Label'.
- 3 Use the **ESC**  key to select a quantity; see Section 4.0.3.
- 4 Press the  **TEST** key to start printing.



4.3.4 Dot Test Pattern Label

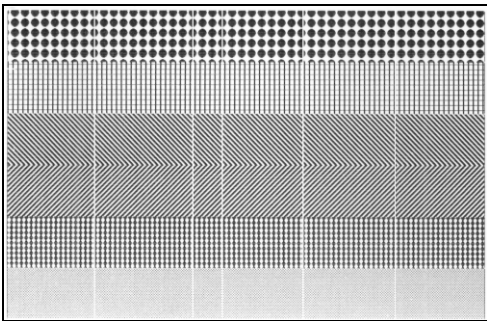
The Dot Test Pattern Label tests the printhead to determine the condition of each thermal element. Pattern examples are shown below. To print a Dot Test Pattern Label:

- 1 Press the  **TEST** key.
- 2 Use the **FWD**  key to scroll to 'Dot Test Pattern'.
- 3 Use the **ESC**  key to select a quantity; see Section 4.0.3.
- 4 Press the  **TEST** key to start printing.



Good Test Pattern Label:

Even pattern consistency indicates the printhead is operating normally.







Faulty Test Pattern Label:

Streaks can indicate a dirty or faulty printhead. See Section 5.5 for cleaning instructions.

4.3.5 Validation Label

The Validation Label is another useful tool for evaluating print quality. To generate a Validation Label:

- 1 Press the  **TEST** key.
- 2 Use the **FWD**  key to scroll to 'Validation Label'.
- 3 Use the **ESC**  key to select a quantity; see Section 4.0.3.
- 4 Press the  **TEST** key to start printing.

4.3.6 User Defined Label

The User Defined Label will reprint the last label printed (unless the printer was powered-off between the printing of the last label and the request to print a user defined label). This label is recalled from the print buffer and can be any of the Quick Test labels, a label format from the host, or a label format recalled from a memory module.

5

Adjusting and Maintaining the Printer



The correct hardware adjustments, regular maintenance, and calibrations found in this section will help ensure continued peak printer performance.

5.0 Media Sensor Adjustment

The laterally adjustable Media Sensor detects the presence of media and the top-of-form of all media types except continuous stock, which is set through programming. For proper detection, the Sensor Eye Mark should be positioned as noted in the table below. If messages such as ‘Out Of Stock’ or ‘Top of Form Fault’ appear, the sensor position may need adjustment.

Media Type*	Sensor Type	Sensor Eye Mark Position
Standard die-cut	Gap	Near the middle of the label

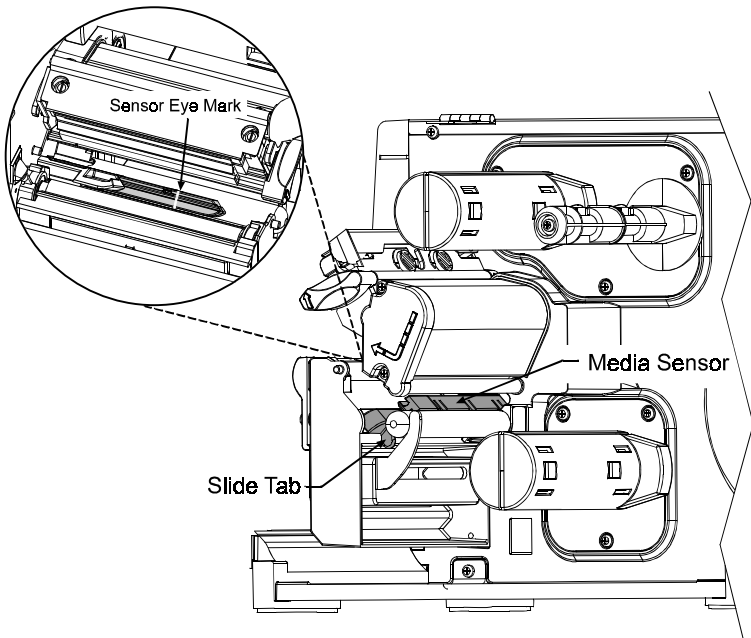
*See Section 7 for an explanation of the media requirements.

To adjust the Media Sensor position:

- 1 With the printer powered ‘On’, media loaded, and the access cover open, rotate the Printhead Latch forward to raise the printhead.
- 2 Pass the media through the Media Sensor then position the Sensor Eye Mark over the label’s TOF mark (see drawing next page) by grasping and moving the Slide Tab ‘in’ or ‘out’.
- 3 Lower the printhead by rotating the Printhead Latch to the locked position. Close the Access Cover.

(Continued next page)

- ④ Enter the Media Settings menu and verify that the correct 'Sensor Type' is selected; see Section 4.1.1.
- ⑤ Exit the menu and return to READY mode.
- ⑥ Press and hold the FEED key until 2-3 labels are advanced (approximately 4 seconds) to set the TOF; see Section 5.1. If 'Uncalibrated', 'Top of Form Fault', or 'Position Error' is displayed go to Section 5.2.



Note: Start of print position changes can be made using the Print Control/Row Adjust or Row Offset (see Section 4.1.2).

5.1 Positioning Calibration

The Positioning Calibration sets the printer's TOF, calculates the label length, and calibrates the ribbon sensor on printers equipped with the thermal transfer option. Perform this procedure for:

Die-cut and reflective media –

- After changing media.
- After a Media Sensor Calibration.
- When a 'Position Fault' message is displayed.
- When a 'Ribbon Fault' message is displayed while ribbon is installed.

Continuous media –

- When a 'Ribbon Fault' message appears while ribbon is installed.

To perform a Positioning Calibration:

With media and ribbon (for thermal transfer equipped models) loaded, press and hold the FEED key for approximately 4 seconds or until 2-3 labels advance. Upon completion, the 'Ready' message will be displayed.

☑ Notes: If 'Uncalibrated' is displayed, first calibrate the Media Sensor; see Section 5.2.

If a 'Ribbon Fault' is displayed, first perform a Level 2 reset before calibrating; see Section 4.0.6. (Ribbon Calibration must be performed with a ribbon installed and with the printer configured for the thermal transfer printing; see Section 4.1.1.)

5.2 Media Sensor Calibration

Media Sensor calibration should be performed during initial printer setup, if switching media types, or if an 'Uncalibrated' message is displayed. To ensure that each label is detected correctly and reliably, two different methods are available to calibrate the printer: Standard and Advanced Entry.

5.2.1 Standard Calibration

The first calibration method is appropriate for most media types. The printhead is raised for visual access to the media. Sensor readings are displayed to provide an indication of the sensor's best position over the media, a position that becomes critical when using reflective or notched stock with a small TOF mark.

(Continued next page)







Three Media Sensor readings are required:

Empty: Nothing in the sensor.









Mark or Gap: Only the backing material, notch, or reflective mark in the sensor.

Paper: The label (with the backing material attached) in the sensor.

To perform a Standard Calibration:

Step	Operator Action	Displayed Message	Comment
1	Turn 'On' the printer.	READY	Wait until 'Ready' is displayed.
2	 Press the MENU key to enter Menu Mode. Raise the printhead for visual access to the Media Sensor and load label media.	MENU MODE MEDIA SETTINGS	See Section 4.0.2 for details.
3	Press the ENT  key to enter the Media Settings menu.	MEDIA SETTINGS MEDIA TYPE	See Section 4.1.1 for details.
4	Press the FWD  key.	MEDIA SETTINGS SENSOR TYPE	See Section 4.1.1 for details.
5	Press the ENT  key. Use the FWD  key to scroll to the desired sensor type and press the ENT  key to enable the selection.	SENSOR TYPE *GAP	See Section 4.1.1 for details. The enabled selection will be indicated with an *.



(Continued next page)

Step	Operator Action	Displayed Message	Comment
6	Press the ESC  key. Use the FWD  key to scroll to 'Sensor Calibration'.		<p>See Section 4.1.1 for details.</p> <p>Press the ESC  key to abort this procedure.</p>
7	Press the ENT  key.		See Section 4.1.1 for details.
8	Press the ENT  key. Ensure no label media is in the Media Sensor then press any key.		<p>Sets the parameter for the 'out of stock' condition.</p> <p>'yyy' is a numerical value representing the current sensor reading.</p>


(Continued next page)

Step	Operator Action	Displayed Message	Comment
9	<p>Proceed according to the media type:</p> <p>Die-cut stock: remove approximately six inches of label material from the backing (liner) and place the backing under the Sensor Eye Mark.</p> <p>Notched stock: place the notched area in the sensor and adjust the Sensor Eye Mark over the notch.</p> <p>Reflective media: place the black mark (face down) in the sensor and adjust the Sensor Eye Mark over the black mark.</p> <p>Press any key to continue.</p>	<div data-bbox="476 164 770 224" style="border: 1px solid black; padding: 2px;"> SCAN BACKING PRESS ANY KEY <yyy> </div> <p style="text-align: center;">-OR-</p> <div data-bbox="476 310 770 370" style="border: 1px solid black; padding: 2px;"> SCAN MARK PRESS ANY KEY <yyy> </div>	<p>Sets the parameter for the 'gap' or 'mark' value.</p> <p>'yyy' is a numerical value representing the current sensor reading.</p> <p>If the 'Sensor Type' is set to 'Continuous', this step is skipped, going directly into Step 10.</p>
<input checked="" type="checkbox"/> Note: After the Media Sensor has been adjusted, do not readjust the position.			


(Continued next page)

Step	Operator Action	Displayed Message	Comment
10	<p>Place the label (and backing) under the Sensor Eye Mark.</p> <p>Press any key to continue.</p>	<pre>SCAN PAPER PRESS ANY KEY <yyy></pre>	<p>Calculates the parameter settings for the 'Paper' value.</p> <p>'yyy' is a numerical value representing the current sensor reading.</p>
11	<p>Depending upon the 'Sensor Type' selection, observe the display for the calibration message.</p>	<pre>GAP MODE CALIBRATION COMPLETE</pre> <p style="text-align: center;">-OR-</p> <pre>REFLECTIVE MODE CALIBRATION COMPLETE</pre> <p style="text-align: center;">-OR-</p> <pre>CONTINUOUS MODE CALIBRATION COMPLETE</pre>	<p>See 'Calibration Problems' (listed below) for other possible messages.</p>
12	<p>Exit upon successful calibration: press the ESC  key to back out of the menu tree, when prompted to save the settings press the ENT  key to return to the Main Menu.</p>	<pre>SAVE CHANGES? ENTER KEY = YES</pre>	<p>After saving the settings, press and hold the FEED key, approximately 4 seconds, to calibrate the label position.</p>


Calibration Problems: If problems occur during calibration, one of the following messages will be displayed. The ‘Comment’ column addresses the most likely cause and the corrective action to be taken (if any) for each situation.

Displayed Message	Action	Comment
	Press any key.	The printer measured only a small difference between the ‘empty’ and ‘gap’ readings. Transparent backing or notched type media typically gives this indication. In this case, there may be a slight delay in the ‘Out of Stock’ indication, after the media supply is emptied.

Or:

Displayed Message	Action	Comment
	Press any key.	Only a small difference or no change in low sensor readings was detected. Ensure that nothing is stuck in the media sensor. Retry calibration. If the problem persists, perform the ‘Advanced Entry Calibration’; see Section 5.2.2. If in reflective mode – REFLECTIVE MODE will be displayed instead of GAP MODE.

Or:












Displayed Message	Action	Comment
	Press any key.	Consistently high readings were received which could indicate a faulty sensor. Ensure that no labels are stuck in the media sensor. Retry calibration. If the problem persists, call for service. When in reflective mode – REFLECTIVE MODE will be displayed instead of GAP MODE.

5.2.2 Advanced Entry Calibration















The second calibration method is the Advanced Entry Calibration. **This method overrides all previous calibration settings and should be used only when the Standard Calibration method has failed.** The procedure has two parts:

- 1) Sensor Gain: Different algorithms are used for sampling, to produce different measurements for the media.
- 2) Sensor Levels: At a selected gain, values are directly input for 'Paper', 'Mark' or 'Gap', and 'Empty' variables.



To perform an Advanced Entry Calibration:

Step	Operator Action	Displayed Message	Comment
1	Turn 'On' the printer.		
2	 Press the MENU key to enter Menu Mode. Raise the printhead assembly for visual access to the Media Sensor and media.		See Section 4.0.2 for details.
3	Press the ENT  key to enter the Media Settings menu.		See Section 4.1.1 for details.
4	Press the FWD  key.		See Section 4.1.1 for details.
5	Press the ENT  key. Use the FWD  key to scroll to the desired sensor type and press the ENT  key to enable the selection.		See Section 4.1.1 for details. The enabled selection will be indicated with an *.

(Continued next page)

Step	Operator Action	Displayed Message	Comment
6	Press the ESC  key. Use the FWD  key to scroll to 'Sensor Calibration'. Press the ENT  key.		See Section 4.1.1 for details. Press the ESC  key to abort this procedure.
7	Use the FWD  key to scroll to 'Advanced Entry'. Press the ENT  key.		See Section 4.1.1 for details.
8	Press the ENT  key.		See Section 4.1.1.
9	Place the label under the Sensor Eye Mark and lower the printhead. Using the FWD  key increment the Gain Number. Press the ENT  key to select the new setting and then record the sensor reading (the 'yyy' value). Repeat this process for each of the 16 Gain Numbers. These are the Label Values .	 <p style="text-align: center;">-OR-</p> 	Ensure that an unmarked label area (without pre-printing) is in the Media Sensor.

(Continued next page)

Step	Operator Action	Displayed Message	Comment
10	<p>Proceed according to media type:</p> <p>Die-cut stock: remove approximately six inches of label material from the backing and place the backing under the Sensor Eye Mark. Lower the printhead.</p> <p>Notched stock: place the notched area in the sensor and adjust the Sensor Eye Mark over the notch. Lower the printhead.</p> <p>Reflective stock: place the black mark (face down) in the sensor and adjust the Sensor Eye Mark over the mark. Lower the printhead.</p> <p>Using the FWD  key increment the Gain Number. Press the ENT  key to select the new setting and then record the sensor reading (the 'yyy' value).</p> <p>Repeat this process for each of the 16 Gain Numbers, recording each value.</p> <p>These are the TOF Values.</p>	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"> GAIN TRAN <yyy> *00 (0 - 15) </div> <p style="text-align: center;">-OR-</p> <div style="border: 1px solid black; padding: 2px;"> GAIN REFL <yyy> *00 (0 - 15) </div>	<p>'yyy' is a numerical value representing the current sensor reading.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <p><input checked="" type="checkbox"/> Note: After the Media Sensor has been adjusted, do not readjust the position.</p> </div>





(Continued next page)

Step	Operator Action	Displayed Message	Comment
11	Using the Gain Number data collected from Steps 9 and 10, subtract each Label Value from the TOF Value. From the resulting list of Difference Values, select the largest number. Its associated Gain Number is the best selection for the media. See the example from below.	<pre>GAIN TRAN <yyy> *00 (0 - 15)</pre> <p style="text-align: center;">-OR-</p> <pre>GAIN REFL <yyy> *00 (0 - 15)</pre>	<p>'yyy' is a numerical value representing the current sensor reading.</p> <p>Both sensor readings must be above 20.</p>







Gain Number	Label Value	TOF Value	Difference Value
00	255	254	1
01	251	240	11
02	241	213	28
03	231	182	49
04	219	150	69
05	212	119	93
06	200	88	112
07	189	58	131
08	178	32	146
09	167	20	147
10	156	17	139
11	146	16	130
12	136	15	121
13	126	15	111
14	116	14	102
15	112	14	98

Example from the data compiled in the table above: Gain Algorithm Number 8 should be used because it has the highest difference value (146) where both the Label Value and the TOF Value is above 20.

(Continued next page)

Step	Operator Action	Displayed Message	Comment
12	Using the FWD  key, select the Gain Number as determined in Step 11. Press the ENT  key to enable the entry.	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"> GAIN TRAN <yyy> *08 (0 - 15) </div> <p style="text-align: center;">-OR-</p> <div style="border: 1px solid black; padding: 2px;"> GAIN REFL <yyy> *08 (0 - 15) </div>	When enabled, the selection will be indicated with an *.
13	Using the 'Gain Number' set in Step 12, complete the following steps: <ol style="list-style-type: none"> ❶ Place the label under the Media Sensor. Record the sensor reading and label it "P" (paper). ❷ Place the backing, mark, or notch under the Media Sensor. Record the sensor reading and label it "G" or "M" (gap or mark respectively). ❸ Remove all media. Record the sensor reading and label it "E". 	<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"> GAIN TRAN <yyy> *08 (0 - 15) </div> <p style="text-align: center;">-OR-</p> <div style="border: 1px solid black; padding: 2px;"> GAIN REFL <yyy> *08 (0 - 15) </div>	'yyy' is a numerical value representing the current sensor reading.
14	Press the ESC  key. And then press the FWD  key.	<div style="border: 1px solid black; padding: 2px;"> ADVANCED ENTRY SENSOR LEVELS </div>	

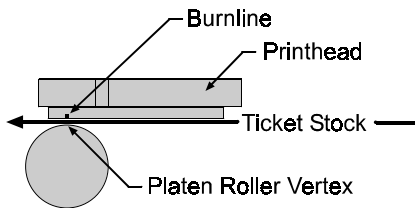
(Continued next page)

Step	Operator Action	Displayed Message	Comment
15	<p>Press the ENT  key.</p> <p>Using the FWD  or the REV  key set the 'Paper' level to the value determined in the previous step. Press the ENT  key to set the entry and advance the menu.</p> <p>Repeat for the 'Mark' or 'Gap' and 'Empty' levels.</p>	<div style="border: 1px solid black; padding: 2px; text-align: center;">PAPER SENSOR LEVEL P*178 G*136 E*014</div> <p style="text-align: center;">↓</p> <div style="border: 1px solid black; padding: 2px; text-align: center;">GAP SENSOR LEVEL P*178 G*32 E*014</div> <p style="text-align: center;">-OR-</p> <div style="border: 1px solid black; padding: 2px; text-align: center;">MARK SENSOR LEVEL P*178 G*32 E*014</div> <p style="text-align: center;">↓</p> <div style="border: 1px solid black; padding: 2px; text-align: center;">EMPTY SENSOR LEVEL P*178 G*32 E*011</div>	
16	<p>Press the ESC  key to back out of the menu and then press the ENT  key to save the settings and return to the Main Menu and Ready Mode.</p>	<div style="border: 1px solid black; padding: 2px; text-align: center;">SAVE CHANGES? ENTER KEY = YES</div>	<p>From Ready Mode, press and hold the FEED key, approximately 4 seconds, to calibrate the label position.</p>

5.3 Printhead Adjustments

5.3.1 Burn Line Adjustment

The Burn Line is the row of thermal elements extending the length of the printhead. At the factory, the printhead has been adjusted to meet strict print and bar code compliance requirements with 6.5-mil (.0065") media, enabling the printer to accommodate a majority of media types.



Depending upon the equipped printing option, the printhead alignment is slightly different. Thermal transfer models have the Burn Line positioned slightly forward of the Platen Roller vertex to allow the liquefied wax/ink to separate easily from the ribbon base-film and adhere to the label while still hot. Direct thermal models have the Burn Line positioned over the vertex for the more efficient heat transfer.

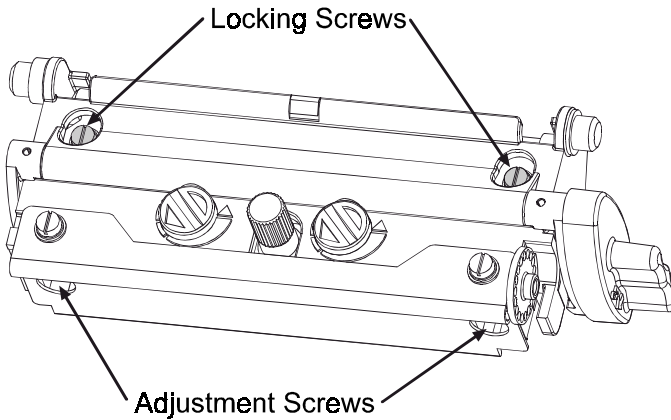
When media with a different thickness or rigidity is used (e.g., heavy tag stock), an adjustment may be needed *if* the print quality has been adversely affected. Generally, thicker media requires a slight forward adjustment of the printhead and thinner media requires a slight backward adjustment to compensate for the resulting change in the Burn Line to vertex relationship.

To adjust the Burn Line of the printhead:

- 1 With the printer loaded with media (and ribbon, if thermal transfer printing), lower and rotate the Printhead Latch to the locked position.
- 2 Loosen the two Locking Screws.
- 3 Turn the Adjustment Screws counter-clockwise until the Burn Line is past the Platen Roller vertex. Print a Validation Label from the Quick Test menu. The label should look light and uneven.
- 4 Tighten the Locking Screws just until they are 'snug'— tight enough to remove any play in the printhead assembly, yet loose enough to allow the Adjustment Screws to move the printhead.

(Continued next page)

- 5 Turn each Adjustment Screws clockwise about $\frac{1}{4}$ a turn (or $\frac{1}{8}$ a turn for finer adjustments). Print another Validation Label and examine the print quality. Repeat this step until labels with even print contrast (darkness) and acceptable print quality are produced.
- 6 Tighten the Locking Screws. Print a final Quick Test label to verify the adjustment.



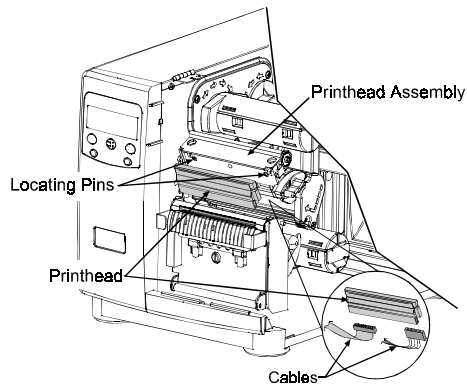
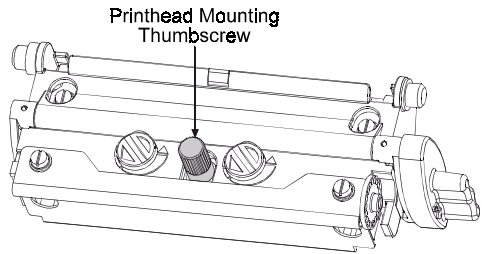
Note: When the Locking Screws are 'snug', turning the Adjustment Screws counter-clockwise will not move the printhead outward. If you have adjusted the printhead too far inward, restart the entire procedure.

5.4 Printhead Replacement

- ☑ **Notes:** The printhead is fragile; use extreme care when handling and never use a sharp object on the printhead surface.
- If you have any questions or concerns regarding this procedure, contact a qualified technician.

Locating pins eliminate the need for an alignment following the installation of a new printhead. To replace the printhead:

- 1 Touch a metal part of the printer's frame to discharge any static electricity that may be present on your body.
- 2 Turn 'Off' and unplug the printer. Open the Access Cover, rotate the Printhead Latch forward and raise the printhead. Remove the ribbon, if installed.
- 3 Lower and rotate the Printhead Latch to the locked position.
- 4 Loosen the Printhead Mounting Thumbscrew (it will remain captive in the assembly). Rotate the Printhead Latch forward to the unlocked position.
- 5 Raise the assembly and while carefully holding the Printhead, disconnect the two Cables and then remove the Printhead.
- 6 While carefully holding the new Printhead, reconnect both Cables.
- 7 Position the Printhead onto the Locating Pins in the Printhead Assembly and secure in place with the Printhead Mounting Screw. (Do not over-tighten this screw.)
- 8 Clean the Printhead; see Section 5.6.1.
- 9 Reload ribbon, if removed. Lower and rotate the Printhead Latch to the locked position. Plug in and turn 'On' the printer.



5.5 Cleaning Schedule

A clean printer operates efficiently. The following list of cleaning items and table below provides the recommended schedule and technique for cleaning the various parts of your printer safely and effectively.

- Isopropyl alcohol
- Cotton swabs
- A clean, lint-free cloth
- Soft-bristle brush
- Soapy water/mild detergent
- Compressed air



CAUTION

For your continued safety and to avoid damage, always turn 'Off' and unplug the printer before cleaning.

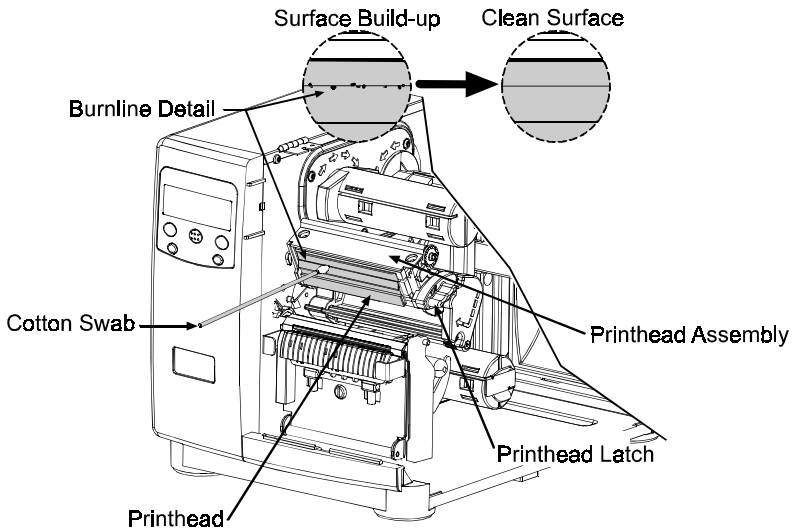
Isopropyl alcohol is a flammable liquid; always take proper precautions when using this solvent.

Recommended Cleaning Schedule		
Area	Method	Interval
Printhead	Using a cotton swab dampened with isopropyl alcohol, clean the printhead from end to end, removing all build-up. See Section 5.5.1. WARNING! Before cleaning, allow the printhead to cool.	Clean after each roll or box of labels, or after each roll of ribbon.
Platen Roller	Using a cotton swab dampened with isopropyl alcohol, rotate the platen and remove all build-up. See Section 5.5.2.	Clean after each roll or box of labels, or after each roll of ribbon.
Media Path / Tear Plate	Compressed air / soft-bristle brush and isopropyl alcohol. Remove all build-up along the path that the ribbon and paper follow through the printer.	As needed, based on a weekly visual inspection.
Media Sensor	Compressed air, isopropyl alcohol if needed. Remove all build-up.	Monthly or as needed.
Interior	Soft-brush or compressed air. Remove all build-up. See Section 5.5.3.	As needed.
Exterior	Mild detergent. Remove all build-up. See Section 5.5.3.	As needed.

5.5.1 Cleaning the Printhead

When print quality begins to decline (indicated by symptoms including non-compliant bar codes, print dropouts, and streaking), the typical cause is debris build-up on the printhead (see Section 4.3.4). Furthermore, if this build-up is not removed it may lead to premature element failures, greatly reducing the life of the printhead. To clean the printhead:

- 1 Turn 'Off' and unplug the printer.
- 2 Open the access cover. Unlock the Printhead Latch and raise the Printhead Assembly. Move media and ribbon away as necessary.
- 3 Gently wipe away all surface build-up on the Printhead (see below) using a cotton swab moistened, not soaked, with isopropyl alcohol. Allow the printhead to dry.
- 4 Re-install ribbon and media, if removed. Lower and rotate the Printhead Latch to the locked position.
- 5 Close the cover. Plug in and turn 'On' the printer. Feed several labels to normalize tracking.



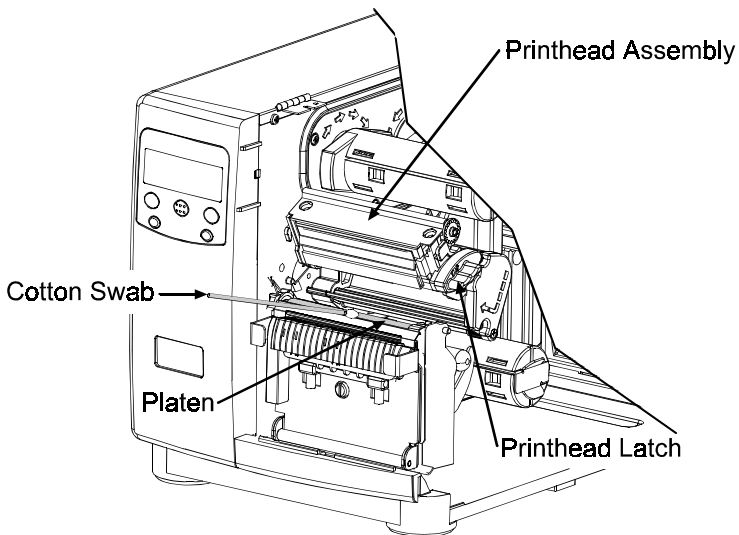
CAUTION

NEVER use a sharp object to clean the Printhead.

5.5.2 Cleaning the Platen Roller

A platen roller contaminated with grit, label adhesive, or ink can cause a decline in print quality and, in extreme cases, cause labels to stick and wrap around the roller. To clean the platen roller:

- 1 Turn 'Off' and unplug the printer.
- 2 Open the access cover. Unlock the Printhead Latch and raise the Printhead Assembly. Remove media and ribbon.
- 3 Using a Cotton Swab dampened with isopropyl alcohol, clean the Platen Roller; manually rotate the roller and repeat, cleaning the entire surface. Allow the Platen Roller to dry.
- 4 Replace ribbon and media.
- 5 Lower the Printhead Assembly and lock the Printhead Latch.
- 6 Close the access cover. Plug in and turn 'On' the printer. Feed several labels to normalize tracking.



NEVER use a sharp object to clean the Platen Roller.

5.5.3 Cleaning Interior and Exterior Surfaces

Interior Surfaces: During operation, dust particles from the media build-up inside the printer. Then, as the media is pulled through the printer, the particles can become attached and cause voids on the printed labels. To prevent this, turn 'Off' and unplug the printer. Remove all media. Using a soft bristle brush or compressed air, clean out the interior of the printer.

Exterior Surfaces: The outer surfaces of the printer should be cleaned using a general-purpose cleanser. Never use abrasive cleansers or solvents. To clean, turn 'Off' and unplug the printer. Using a soft cloth or sponge dampened with the cleanser, wipe the exterior surfaces until clean.

5.6 Updating the Application Program

The printer stores its application program in Flash memory on the Main PCB. A feature is included that allows updates to this program through any printer interface port. Updates can be found on our web site. There are two modes in which the firmware of the printer can be updated: (1) the Ready Mode, or (2) the Download Mode.



WARNING

Should an error occur during the file download (see Section 5.6.3), the update is aborted. If this process did not reach 'Erasing Flash' or 'Updating Software', the previous program is left intact; otherwise, a successful download must be completed before the printer is operable.



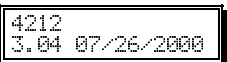

Note: After updating from 2.xx to 3.xx firmware for the first time, you must also download the EFIGS menu language file and copy 832296.01C (or most current version) to lpt1: /b (the DOS Copy command requires the /b parameter because this file contains binary code).

Before beginning an update, identify the current version of the printer's application program by printing a Configuration Label (see Section 4.3.2). Compare that version string to those filenames available from our web site and then download the desired file onto your computer's hard drive.

Proceed with the printer update accordingly:

- If the current application version is 2.091 or greater, refer to Section 5.6.1 or Section 5.6.2.
- If the current application version is 2.08 or less, start with Section 5.6.2.

5.6.1 Updating from the Ready Mode

Update Procedure for Application Version 2.091 or greater			
Step	Displayed Message	Operator Action	Comment(s)
1.		Using the DOS copy command (where 'filename' is the program to be loaded and 'lpt1' is the selected interface port), enter the following: copy filename lpt1:	As an example, this would be entered as: copy 4212tb10_0304.zs lpt1: (where 'lpt1' is the host computer's port; however, this selection can differ to include a serial or other port, as the printer is equipped). The Ready Indicator will flash while the data is received.
2.		No action required.	The new application program is being stored and verified.
3.		No action required.	The printer has reset automatically and is now displaying the new firmware version.
4.		No action required.	The new application is now running. <input checked="" type="checkbox"/> Note: If 'Uncalibrated' or 'Position Fault' is displayed, the printer will have to be calibrated (see Section 5.2).

5.6.2 Updating from the Download Mode

Required Update Procedure for Application Version 2.08 or earlier*			
Step	Displayed Message	Operator Action	Comment(s)
1.	<pre>BOOT-PA10 02.09 2/11/00</pre>	Press and hold the PAUSE and TEST keys while turning 'On' the printer to enter the Download Mode.	<p>The Boot Loader version is displayed.</p> <p><input checked="" type="checkbox"/> Note: This information will vary with the printer model and Boot Loader version.</p>
2.	<pre>UPDATE SOFTWARE SEND SOFTWARE</pre>	Using the DOS copy command, copy the filename to the printer (see Step 2 in Section 5.6.1).	<p>The printer is ready to accept the new application version.</p> <p><input checked="" type="checkbox"/> Note: The parallel port (LPT1) must be used to write to the printer.</p>
3.	<pre>UPDATE SOFTWARE READING IMAGE</pre>	No action required.	The printer is receiving the new image (program).
4.	<pre>ERASING FLASH SOFTWARE IMAGE</pre>	No action required.	The program has been received and verified; now Flash memory is cleared of the previous application.
5.	<pre>WRITING FLASH SOFTWARE IMAGE</pre>	No action required.	The new program is being written into Flash memory. Upon completion, the printer will automatically reset, starting the new application; however, before continuing, the printer must be re-calibrated; see Section 5.2.

*This can also be used as an alternate download method for all other version levels.

5.6.3 Application Update Problems

Note: If experiencing trouble when attempting to download the file to the printer, try the following alternate methods:

- 1) Use the download procedure in Section 5.6.2.
- 2) Windows® users – try restarting the computer in MS-DOS mode.
- 3) Use a Windows® Driver – ‘Send File to Printer Function’.

The following is list of possible update error messages:

Application Update Error Messages	
Displayed Message	Descriptions / Causes / Solutions
DECOMPRESSION ERROR	The printer detected an error during the decompression and transfer of file data from cache storage into the Flash memory. Confirm the version and retry the download; however, if the problem continues call for service.
ERROR ERASING FLASH	The printer could not successfully erase Flash memory. The possible cause is defective Flash memory. Try the download again; however, if the problem continues call for service.
ERROR WRITING FLASH	The printer could not successfully write the program into Flash memory. A possible cause is defective Flash memory. Try the download again; however, if the problem continues call for service.
HARDWARE MISMATCH DATA REJECTED	Application Firmware downloaded was not compatible with the printer’s Main PCB (i.e., firmware used was for a different model and not supported by this boot loader version). See Section 4.1.4 – Configuration Level.
INVALID SOFTWARE DATA REJECTED	The printer detected an error in the download. The possible causes include: <ul style="list-style-type: none"> • An invalid or corrupted file was downloading; try saving the file to the host and then download again. • Communications error. Recheck cabling and port setting.
SOFTWARE MISMATCH DATA REJECTED	Reserved for future use. If this message is consistent, call for service.

5.7 Updating the Boot Loader Program





The printer stores the Boot Loader Program in Flash memory on the Main PCB. A feature allows updates to this program via the printer's interface port. Updates can be found on our web site.



If power is lost while "Upgrading Software" is displayed, the printer will become non-functional and must be returned to the factory for programming or the main board replaced.

Note: Only printers with an Application Version of 2.09 or greater can update the Boot Loader Program.

Before beginning the Boot Loader update, identify the printer's current version. Print a Configuration Label (see Section 4.3.2) and compare that version string to those available from our web site. Download the desired version onto your computer's hard drive. To update the Boot Loader Program:

Boot Loader Update Procedure			
Step	Displayed Message	Operator Action	Comment(s)
1.		Using the DOS copy command (where 'filename' is the program to be loaded and 'lpt1' is the selected interface port), enter the following: copy filename lpt1:	As an example, this would be entered as: copy boottb99_0209.bs lpt1: (where 'lpt1' is the host computer's output port; however, your selection can differ to include a serial or other port, as the printer is equipped). The Ready Indicator will flash while the data is received.
2.		No action required.	The new application program is being stored and verified.
3.		No action required.	The printer has reset automatically.
4.		No action required.	The new application is now running. <input checked="" type="checkbox"/> Note: If 'Uncalibrated' or 'Position Fault' is displayed, the printer will have to be calibrated (see Section 5.2).

6 Troubleshooting

6.0 Troubleshooting Tips

If a problem arises with the printer, the information in this section will help you resolve it. Use this guide as a starting point in troubleshooting. If you have questions, or if problems persist, contact a qualified service technician or a Technical Support Representative. The following are problems that will not necessarily generate a message (see Section 6.1 for Fault and Warning Messages).

If experiencing this problem...	Try this solution...
Cannot communicate through the parallel port:	Be sure the parallel cable is connected and is the correct type for the application. Try setting the 'Parallel Port Direction' to Uni-Directional; some host computers are not bi-directional compatible. See Section 4.1.5.
Display is blank, but the READY indicator is 'On':	The display contrast may set too low. Press and hold the MENU key for 10 seconds or until the display reappears.
Erratic printing (strange characters instead of label formats print):	<ul style="list-style-type: none">• The printer may be in 'hex dump mode'; see Section 6.2. Enter the Diagnostics menu and disable this mode; see Section 4.1.6. Exit the menu, save changes and return to the 'READY' mode.• If using the serial port for communicating, check both the host and printer port configuration; the printer may be set for 8 data bits while the host is set for 7 bits (or vice versa).

(Continued next page)

If experiencing this problem...	Try this solution...
Intellifont™ will not print:	Intellifont™ format is Little/Big Endian specific. The printer uses Big Endian. Refer to your font supplier for information.
Light print on the right side (facing the printer) of the label:	<ul style="list-style-type: none"> • The Printhead Leveling Cam may be incorrectly adjusted; see Section 5.3.1. • The Platen Roller may be dirty or worn; see Section 5.5.2.
Missing information in the printed label:	<ul style="list-style-type: none"> • Check the label format for character placement outside the dimensions of the label; all row/column values must allow enough space for the height/length of the characters and bar codes to be printed within the format size. • The available memory may have been exceeded by the memory requirement of the label format. Try reducing the memory allocated to either the internal module or scaleable font caches; see System Settings/Memory Settings – Section 4.1.4.
Missing print on left or right side of the label:	Information may be formatted outside the label dimensions. Check your software program label size or check the values in the menu for Print Control / Column Offset and Print Control / Custom Adjustments / Column Offset; see Section 4.1.2.

(Continued next page)

If experiencing this problem...	Try this solution...
<p>No power (all indicator lights are 'Off'):</p>	<ul style="list-style-type: none"> • Verify that the AC power cord has been made at both the outlet and the printer; also, ensure the power switch is 'On'. • Verify that the AC outlet is functioning, or try moving the printer to another AC circuit. • The AC cord may be damaged; replace it. • The power switch may be defective or the line fuse blown; call for service.
<p>Nothing is printing (labels advance normally, but no image is printed):</p>	<p>Begin by examining the used ribbon for an image.</p> <p>If an image is on the used ribbon:</p> <ul style="list-style-type: none"> • Verify that the ribbon was properly loaded per Section 3.3. • If it was properly loaded, the wrong ribbon coating configuration was used. Clean the printhead (see Section 5.5.1). Use only Pitney Bowes ribbons. <p>If no image is on the used ribbon:</p> <ul style="list-style-type: none"> • Run any Quick Test label; see Section 4.3. If an image printed, then check the protocol and port settings for both the printer and host. These must match. • The heat setting may be too low. Make an adjustment in the software program or through the Front Panel. • The media/ribbon combination may be incorrect. Contact a Media Representative. • The printhead or printhead cable(s) may be loose; power 'Off' and reconnect; see Section 5.4 for locations.

(Continued next page)

If experiencing this problem...	Try this solution...
<p>Nothing happens when trying to print using a software program:</p>	<ul style="list-style-type: none"> • Ensure that the printer is at READY. • Observe the Front Panel, if the READY light does not flash as you send the format check the protocol and port settings between the printer and host. • Ensure the I/O cable meets the requirements found in Section 3.0.1.
<p>Poor print quality:</p>	<ul style="list-style-type: none"> • The printhead may need cleaning; see Section 5.5.1. • Adjust these settings through the Front Panel or by host commands, Heat, Print Speed and Darkness; see Sections 2.1.1 and 4.1.2. • The media/ribbon combination may not be compatible; see Section 2.1. • The Printhead Leveling Cam may be incorrectly adjusted; see Section 5.3.1. • The Platen Roller may be dirty or worn; see Section 5.5.2. • The Printhead Burn Line may need adjusting; see Section 5.3.2.
<p>Skips labels when printing:</p>	<ul style="list-style-type: none"> • The printer may need calibration; see Section 5.1 and 5.2. • The Media Sensor may be slightly out of position; readjust the position; see Section 5.0. • The label format may be too close (within 1/8" of the edge) to the start of the next label. Try reducing or moving the format slightly.
<p>Unable to print rotated text:</p>	<ul style="list-style-type: none"> • The characters may be formatted outside the label dimensions. Ensure the row/column values provide enough room for the height of the characters or bar code to be printed. See the <i>Programmer's Manual</i> for details.

6.1 Fault and Warning Messages

When the printer detects a problem or the potential for a problem, a message is displayed and the Error Indicator (see Section 4.0.4) will be illuminated. There are two types of indications:

- Fault Indication – the indicator ‘fast flashes’ with message.
- Warning Indication – the indicator ‘slow flashes’ with message.

The Fault and Warning Messages are listed in the following two tables, including a brief description of each and possible solution(s).

☑ Note: After the printer enters a fault condition, the fault must be corrected and then FEED key must be pressed to clear the condition.

Fault Messages:

Displayed Message	Description	Possible Solution(s)
ADC FAULT	The printer has detected an analog to digital circuit converter failure.	Try cycling the printer power ‘Off’ and ‘On’. If the fault does not clear, call for service.
DMA FAULT	The printer has detected a Direct Memory Access failure.	Try cycling the printer power ‘Off’ and ‘On’. If the fault does not clear, call for service.

(Continued next page)

Fault Messages (continued):

Displayed Message	Description	Possible Solution(s)
<div style="border: 1px solid black; padding: 2px; width: fit-content;">OUT OF STOCK</div>	<p>The printer cannot detect media.</p>	<ol style="list-style-type: none"> 1) Reload media. 2) Ensure that the labels are passing through the Media Sensor. 3) Readjust the Media Sensor over the TOF mark; see Section 5.0. 4) Calibrate the printer; see Section 5.2.
<div style="border: 1px solid black; padding: 2px; width: fit-content;">POSITION FAULT</div>	<p>The printer has determined that the media is not correctly positioned to print.</p>	<p>Press and hold the FEED key for 4 seconds; see Section 5.1. Calibration may also be needed. See Section 5.2.</p>
<div style="border: 1px solid black; padding: 2px; width: fit-content;">PRINT ENGINE FAULT</div>	<p>The printer has detected a problem in the print logic.</p>	<p>Try cycling the printer power 'Off' and 'On'. If the fault does not clear, call for service.</p>
<div style="border: 1px solid black; padding: 2px; width: fit-content;">RAM FAULT</div>	<p>The system has detected a RAM failure.</p>	<p>Try cycling the printer power 'Off' and 'On'. If the fault does not clear, call for service.</p>

(Continued next page)

Fault Messages (continued):

Displayed Message	Description	Possible Solution(s)
<div style="border: 1px solid black; padding: 2px; width: fit-content;">RIBBON FAULT</div>	<p>The ribbon sensor detects no or only sporadic ribbon supply hub movement; or the sensor values may have changed.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><input checked="" type="checkbox"/> Note: The ribbon sensor calibration will only take effect after a Level 2 reset has cleared the previously set values; see Section 4.0.6.</p> </div>	<ol style="list-style-type: none"> 1) Ensure that ribbon is correctly loaded with the printhead locked down. 2) Check the ribbon supply and ribbon take up hubs for obstructions that may be stopping movement. 3) Ensure that the ribbon supply core fits snugly on the ribbon supply hub. 4) Ensure that the media and paper combination is correct. 5) Perform a Level 2 Reset (Section 4.0.6) and then a Positioning Calibration (Section 5.1).
<div style="border: 1px solid black; padding: 2px; width: fit-content;">STROBE TIMING FAULT</div>	<p>The printer has detected a problem applying the printhead heat strobe.</p>	<p>Try cycling the printer power ‘Off’ and ‘On’. If the fault does not clear, call for service.</p>
<div style="border: 1px solid black; padding: 2px; width: fit-content;">TEMPERATURE FAULT</div>	<p>The printer has shutdown to allow the printhead temperature to cool.</p>	<p>Turn ‘Off’ the printer until cool to prevent permanent damage due to an excessive printhead temperature.</p>

(Continued next page)

Fault Messages (continued):

Displayed Message	Description	Possible Solution(s)
<div style="border: 1px solid black; padding: 2px; width: fit-content;">TOP OF FORM FAULT</div>	<p>The printer could not find the TOF mark within the maximum label length setting or it found a TOF in an unexpected place.</p>	<p>If media is moving:</p> <ol style="list-style-type: none"> 1) Press the FEED key. It may be necessary to re-calibrate the printer; see Section 5.2. 2) The Media Sensor may be out of position. Readjust its position; see Section 5.0. 3) The media may not be properly loaded. Reload media and ensure that the Media Guide is positioned properly; see Section 3.1. 4) The label may be longer than the default value for maximum length. Check the Media Settings / Maximum Label Length; see Section 4.1.1. 5) The Media Sensor may be obstructed. Check and carefully remove any obstruction (labels, paper dust, adhesive, etc). <p>If media is not moving:</p> <p>The printhead may not be latched; close and lock the printhead.</p>
<div style="border: 1px solid black; padding: 2px; width: fit-content;">24V OUT OF TOLERANCE</div>	<p>The printer has detected a drop in the 24-volt power supply.</p>	<p>Try cycling the printer power 'Off' and 'On'. If the fault does not clear, call for service.</p>

Warning Messages:

Displayed Message	Description	Action
DOT FAILURE	The printer has detected burned-out printhead elements.	Replace the printhead when print quality becomes unacceptable or if the printed bar codes are non-compliant.
GAP MISSED	The printer missed detecting a label gap.	Readjust the media sensor and recalibrate.
GOODBYE	Power has been removed and shutdown is in progress.	The printer power switch was turned 'Off', the line fuse has blown, or AC line voltage has been lost.
HOST CHANGES PENDING	The host has pending configuration changes that will not take effect until a 'host reset command' is issued.	To save changes, send a host reset command (in DPL) or to discard changes perform a front panel reset; see Section 4.0.6.
LOW VOLTAGE	The printer has detected a low operating voltage.	A possible low or fluctuating line voltage level. Try moving the printer to another outlet. If this condition persists call for service.
RIBBON LOW	Ribbon will soon need replacement.	Replace ribbon when needed.
RTC RAM FAILURE	The printer was unable to save settings in permanent memory.	If the condition persists, possible faulty Main PCB. Call for service.

(Continued next page)

Warning Messages (continued):

Displayed Message	Description	Action
TEMPERATURE PAUSE	A high printhead temperature has been detected.	Allow printhead to cool.
WARNING RESOLVED	The previous warning condition has been corrected.	No further action is necessary.

6.2 Hex Dump Mode

The hex dump mode is a useful tool for diagnosing problems, including communication and DPL™ syntax errors, allowing a comparison of input strings (sent by host) to output data (received by printer). To decode this information, the *Programmer's Manual* is an essential reference. This output can be used for debugging the label format. And by repeatedly sending a format, this mode can uncover handshaking problems (if they exist). Handshaking problems are identified by sections of missing data in the character string.

To begin, go to the Diagnostics menu and enable Hex Dump Mode; see Section 4.1.6. Exit the menu, save changes and returning to the 'READY' mode. Now all data sent to the printer will now be output in hexadecimal code, along with the printable ASCII equivalents.

The figure below is a sample Hex Dump Label. After sending a label format to the printer, the hex code output will be immediate. As a final note, many software programs use bit mapping to construct the label, making diagnosis difficult. Contact a Technical Support Representative with any questions.

```

0000 02 4C 0D 44 31 31 0D 31 ^L D11.1
0008 36 31 31 30 30 30 30 33 61100003
0010 32 30 30 30 31 30 46 4F 200010FD
0018 4E 54 20 36 3A 20 41 4C NT 6: AL
0020 4C 20 56 41 4C 49 44 20 L VALID
0028 20 20 20 20 20 20 20 20
0030 20 20 20 0D 31 36 31 31 .1611
0038 30 30 30 30 32 38 30 30 00002800
0040 30 31 30 20 20 20 20 20 010
0048 20 20 20 43 48 41 52 41 CHARA
0050 43 54 45 52 53 3A 0D 31 CTERS: 1
0058 36 31 31 30 30 30 32 61100002
0060 34 30 30 31 30 23 24 400010#$
0068 25 26 28 29 2A 2B 2E 2D %&()*+,-

```

Note: To exit the hex dump mode, re-enter the Diagnostics Menu and disable the Hex Dump Mode, exit the menu, then save the changes to return to the 'READY' mode.

7

Specifications

7.0 Printer Specifications

Bar Codes

(See the *Programmer's Manual* for details. See Appendix B for visual samples.)

Code 39, Interleaved 2 of 5, Code 128 (subsets A, B and C), Codabar, LOGMARS, UPC-A, UPC-E, UPC 2 & 5 digit addendums, EAN-8, EAN-13, EAN 2 & 5 digit addendums, UPC Random Weight, Code 93, Plessey, Universal Shipping Container Symbology, Code 128 MOD 43, Postnet, USS/EAN-128 Random Weight, Telepen, UPS MaxiCode (modes 2 & 3), PDF417, Data Matrix and QR Code.

Fonts

9 Bit-Mapped Fonts, rotatable 0, 90, 180, 270 degrees

CG Triumvirate™ Scalable Font

CG Triumvirate™ Condensed Bold Scalable Font

Communications

Interfaces:	EIA RS-232/DB-25 Serial, and IEEE 1284 Compliant Parallel
Serial Data Rates:	2400, 4800, 9600, 19.2K, and 38.4K baud.
Handshaking:	Xon/Xoff; CTS/DTR
Parity:	Even, Odd, or None
Stop Bits:	1 or 2
Data Bits:	7 or 8

Electrical

Input Voltage:	90 – 132 or 180 – 264 VAC @ 47–63 Hz, auto-ranging.
Power Consumption:	Typical Operating: 90 Watts / Standby: 10 Watts
Grounding:	Unit must be connected to a properly grounded receptacle.

Environmental Requirements

Operating Temperature:	32° F – 100° F (0° C to 38° C)
Storage Temperature:	0° F –140° F (-17° C to 60° C)
Humidity:	10% – 95% non-condensing
Dust:	Non-conducting, non-corrosive
Electromagnetic Radiation:	Moderate RF fields can be tolerated

Mechanical

Height:	12.70" (322.6mm)
Width:	12.62" (320.6mm)
Depth:	18.60" (472.5cm)
Weight:	45 lbs. (20.5 kg)

Printing Specifications

Printing Type:	Direct Thermal or optional Thermal Transfer
Print Speed:	2 – 8 IPS (50.8 – 203.2 mm/ps)
Printhead Resolution:	203 DPI (8 dots/mm)
Nominal Dot Size:	.0043" x .0052" (.109mm x .132mm)
Printhead Protection Type:	Thermistor Sensor. Temporary shutdown of printing occurs upon over-temperature detection; printing resumes automatically after cool-down.
SDRAM Memory:	8 MB
Flash Memory:	1 MB
Maximum Print Width:	4.09" (103.9 mm)
Print Length Range:	.25" – 99" (6.35mm – 2514.6mm)
Print Justification:	Left

A

Appendix A

ASCII Control Code Chart

	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex
Ctrl @	NUL	0	00		32	20	@	64	40	`	96	60
Ctrl A	SOH	1	01	!	33	21	A	65	41	a	97	61
Ctrl B	STX	2	02	"	34	22	B	66	42	b	98	62
Ctrl C	EXT	3	03	#	35	23	C	67	43	c	99	63
Ctrl D	EOT	4	04	\$	36	24	D	68	44	d	100	64
Ctrl E	ENQ	5	05	%	37	25	E	69	45	e	101	65
Ctrl F	ACK	6	06	&	38	26	F	70	46	f	102	66
Ctrl G	BEL	7	07	'	39	27	G	71	47	g	103	67
Ctrl H	BS	8	08	(	40	28	H	72	48	h	104	68
Ctrl I	HT	9	09	)	41	29	I	73	49	i	105	69
Ctrl J	LF	10	0A	*	42	2A	J	74	4A	j	106	6A
Ctrl K	VT	11	0B	+	43	2B	K	75	4B	k	107	6B
Ctrl L	FF	12	0C	,	44	2C	L	76	4C	l	108	6C
Ctrl M	CR	13	0D	-	45	2D	M	77	4D	m	109	6D
Ctrl N	SO	14	0E	.	46	2E	N	78	4E	n	110	6E
Ctrl O	SI	15	0F	/	47	2F	O	79	4F	o	111	6F
Ctrl P	DLE	16	10	0	48	30	P	80	50	p	112	70
Ctrl Q	DC1	17	11	1	49	31	Q	81	51	q	113	71
Ctrl R	DC2	18	12	2	50	32	R	82	52	r	114	72
Ctrl S	DC3	19	13	3	51	33	S	83	53	s	115	73
Ctrl T	DC4	20	14	4	52	34	T	84	54	t	116	74
Ctrl U	NAK	21	15	5	53	35	U	85	55	u	117	75
Ctrl V	SYN	22	16	6	54	36	V	86	56	v	118	76
Ctrl W	ETB	23	17	7	55	37	W	87	57	w	119	77
Ctrl X	CAN	24	18	8	56	38	X	88	58	x	120	78
Ctrl Y	EM	25	19	9	57	39	Y	89	59	y	121	79
Ctrl Z	SUB	26	1A	:	58	3A	Z	90	5A	z	122	7A
Ctrl [	Esc	27	1B	;	59	3B	[	91	5B	{	123	7B
Ctrl \	FS	28	1C	<	60	3C	\	92	5C	|	124	7C
Ctrl]	GS	29	1D	=	61	3D	]	93	5D	}	125	7D
Ctrl ^	RS	30	1E	>	62	3E	^	94	5E	~	126	7E
Ctrl _	US	31	1F	?	63	3F	_	95	5F		127	7F

(Continued next page)

Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex
Ç	128	80	á	160	A0		192	C0	Ó	224	E0
ü	129	81	í	161	A1		193	C1	ß	225	E1
é	130	82	ó	162	A2		194	C2	Ô	226	E2
â	131	83	ú	163	A3		195	C3	Õ	227	E3
ä	132	84	ñ	164	A4		196	C4	ö	228	E4
à	133	85	Ñ	165	A5		197	C5	Ö	229	E5
ã	134	86	a	166	A6	ã	198	C6	μ	230	E6
ç	135	87	°	167	A7	Ä	199	C7	ρ	231	E7
ê	136	88	¿	168	A8		200	C8	ρ	232	E8
è	137	89	©	169	A9		201	C9	Û	233	E9
ë	138	8A		170	AA		202	CA	Ü	234	EA
ï	139	8B	1/2	171	AB		203	CB	Û	235	EB
î	140	8C	1/4	172	AC		204	CC	ý	236	EC
ì	141	8D	ì	173	AD		205	CD	Ÿ	237	ED
Ā	142	8E		174	AE		206	CE		238	EE
Ă	143	8F	–	175	AF		207	CF		239	EF
É	144	90		176	B0	Ö	208	D0		240	F0
Æ	145	91		177	B1	D	209	D1	±	241	F1
Æ	146	92	2	178	B2	È	210	D2		242	F2
ô	147	93	3	179	B3	È	211	D3	3/4	243	F3
ö	148	94	´	180	B4	Ë	212	D4		244	F4
ò	149	95	Á	181	B5		213	D5		245	F5
û	150	96	À	182	B6	Í	214	D6	÷	246	F6
ù	151	97	À	183	B7	Î	215	D7	°	247	F7
ÿ	152	98	©	184	B8	Ï	216	D8	°	248	F8
Ö	153	99	l	185	B9		217	D9	¨	249	F9
Û	154	9A		186	BA		218	DA	·	250	FA
Ø	155	9B	»	187	BB		219	DB		251	FB
£	156	9C		188	BC		220	DC		252	FC
Ø	157	9D	¢	189	BD		221	DD		253	FD
x	158	9E	¥	190	BE	ï	222	DE		254	FE
f	159	9F		191	BF		223	DF	€	255	FF

B

Appendix B

Available Fonts and Bar Codes

All character fonts and bar codes available with the printer are described in this section. Each font and bar code has a name associated with it for use in programming. Human-readable fonts have numeric names, while bar code fonts have alpha names. Consult the *Programmer's Manual* for detailed information.

Fonts

Fonts 0 through 8 use the slash zero (Ø) convention for distinguishing between the number zero and the letter O. The slash can be removed with the 'Z' label-formatting command. These fonts are non-proportional (monospaced): each character takes the same amount of space for printing.

The Triumvirate font number 9 is a proportional font: each character will take up a different amount of space when printed.

Font	Valid ASCII Characters
0	32-127
1	32-168, 171, 172, 225
2	32-168, 171, 172, 225
3	32, 35-38, 40-58, 65-90, 128, 142-144, 146, 153, 154, 156, 157, 165, 168, 225
4	32, 35-38, 40-58, 65-90, 128, 142-144, 146, 153, 154, 156, 157, 165, 168, 225
5	32, 35-38, 40-58, 65-90, 128, 142-144, 146, 153, 154, 156, 157, 165, 168, 225
6	32, 35-38, 40-58, 65-90, 128, 142-144, 146, 153, 154, 156, 157, 165, 168, 225
7	32-126
8	32, 48-57, 60, 62, 67, 69, 78, 83, 84, 88, 90
9	32-126, 128-169, 171-173, 181-184, 189, 190, 198, 199, 208-216, 222, 224-237, 241, 243, 246-250

The table below lists the font sizes; the numbers indicate the number of dots.

Font	Height	Width	Spacing
Font 0	7	5	1
Font 1	13	7	2
Font 2	18	10	2
Font 3	27	14	2
Font 4	36	18	3
Font 5	52	18	3
Font 6	64	32	4
Font 7	32	15	5
Font 8	28	15	5

Font 0: 96-character alphanumeric, upper and lower case.

```
Font 0
!"#$%&'()*+,-./
0123456789:;<=>?@
ABCDEFGHIJKLMNPO
QRSTUVWXYZ[\]^_`
abcdefghijklmnopqrstuvwxyz
0123456789:;<=>?@
```

Font 1: 145-character upper and lower case alphanumeric with descenders and ascenders.

```
Font 1:
!"#$%&'()*+,-./0123456789:;<=>?@
ABCDEFGHIJKLMNPOQRSTUVWXYZ[\]^_`
abcdefghijklmnopqrstuvwxyz
CueaaaaaeeeeiiiIAAEæffooo
ûüÿÖÜø£Ø×fa iouñÑ&ð¿¼½¾
```

Font 2: 138-character alphanumeric, upper and lower case.

```
Font 2:
!"#$%&'()*+,-./0123456789:;<=>?@
ABCDEFGHIJKLMNPOQRSTUVWXYZ[\]^_`
abcdefghijklmnopqrstuvwxyz
CueaaaaaeeeeiiiIAAEæffooo
ûüÿÖÜø£Ø×fa iouñÑ&ð¿¼½¾
```

Font 3: 62-character alphanumeric, uppercase.

```
Font 3:
!"#$%&'()*+,-./0123456789:;<=>?@
ABCDEFGHIJKLMNPOQRSTUVWXYZ
CAAEÖÜø£ØÑ&ð
```

Font 4: 62-character alphanumeric, uppercase.

FONT 4:
\$ % & () * + . - / 0 1 2 3 4 5 6 7 8 9 :
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Ç Ä Å É Ö Ù £ Ø Ñ Ì ß

Font 5: 62-character alphanumeric, uppercase.

FONT 5:
\$ % & () * + . - / 0 1 2 3 4 5 6 7 8 9 :
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Ç Ä Å É Ö Ù £ Ø Ñ Ì ß

Font 6: 62-character alphanumeric, uppercase.

FONT 6:
\$ % & () * + . - . /
0 1 2 3 4 5 6 7 8 9 :
A B C D E F G H I J K L
M N O P Q R S T U V W X Y Z
Ç Ä Å É Ö Ù £ Ø Ñ Ì ß

Font 7: OCR-A, size I.

Font 8: OCR-B, size III.

Font 7:

! " # \$ % & ' () * + , - . /
0 1 2 3 4 5 6 7 8 9 : ; < = > ? @
A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z [\] ^ _ `
a b c d e f g h i j k l m n o
p q r s t u v w x y z { | } ~ ¯

Font 8:

0123456789
<>CENSTXZ|

Font 9: Internal Triumvirate font. The number in the bar code height field sets the point sizes. Larger point sizes can be obtained by increasing the height and width multipliers.

4 pt ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789
5 pt ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789
6 pt ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789
8 pt ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz01234
10 pt ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789
12 pt ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789
14 pt ABCDEFGHIJKLMNOPQRSTUVWXYZ
18 pt ABCDEFGHIJKLMNOPQRST
24 pt ABCDEFGHIJKLMNOP
30 pt ABCDEFGHIJK
36 pt ABCDEFGH
48 pt ABCDE
72 pt AB

Bar Code Summary Data

Bar Code fonts have alpha names (left column in the table below). Uppercase alpha names will print barcodes with human-readable interpretations. Lowercase alpha names will print barcodes only. The table is followed by visual samples.

Bar Code ID	Type	Length	Checksum	Valid ASCII Characters, decimal value representation
A	Code 3 of 9	Varies	No	32, 36, 37, 42, 43, 45-57, 65-90
B	UPC-A	11	Yes	48-57 Numeric only. Option V used in the 6th & 7th position
C	UPC-E	6	Yes	48-57 Numeric only
D	Interleaved 2 of 5 (I 2 of 5)	Varies	No	48-57 Numeric only
E	Code 128	Varies	M-103	32-127
F	EAN-13	12	Yes	48-57 Numeric only. Option V used in the 7th & 8th position
G	EAN-8	7	Yes	48-57 Numeric only
H	HBIC	Varies	M-43	32, 36-39, 42, 43, 45-57, 65-90
I	Codabar	Varies	No	36, 43, 45-58, 65-68
J	Interleaved 2 of 5 with a modulo 10 checksum	Varies	M-10	48-57 Numeric only
K	Plessey	Up to 14	M-10	48-57 Numeric only. Option + is Last Character for Second M-11 Checksum
L	Interleaved 2 of 5 with a modulo 10 checksum & shipping bearer bars	13	M-10	48-57 Numeric only
M	2 digit UPC addendum	2	Yes	48-57 Numeric only
N	5 digit UPC addendum	5	Yes	48-57 Numeric only
O	Code 93	Varies	No	35-38, 42-58, 65-90, 97-122
p	Postnet	Varies	Yes	48-57 Numeric only
Q	UCC/EAN Code 128	19	Yes	48-57 Numeric only
R	UCC/EAN Code 128 K-Mart NON EDI barcode	18	Yes	48-57 Numeric only
S	UCC/EAN Code 128 Random Weight	34 +	Yes	48-57 Numeric only
T	Telepen	Varies	Yes	Alphanumeric
U	UPS MaxiCode	84	Yes	Alphanumeric
v	FIM	1	No	A, B, C, D
z	PDF-417	Varies	Yes	All
W1c	DataMatrix	Varies	Yes	All 8-bit values
W1d	QR Code – Auto format	Varies	Yes	Alphanumeric
W1D	QR Code – Manual format	Varies	Yes	Single byte or Kanji double byte



Bar Code A: Code 3 of 9



Bar Code B: UPC-A



Bar Code C: UPC-E



Bar Code D: Interleaved 2 of 5



Bar Code E: Code 128



Bar Code F: EAN-13



Bar Code G: EAN-8



Bar Code H: Health Industry Bar Code (HBIC)



Bar Code I: Codabar

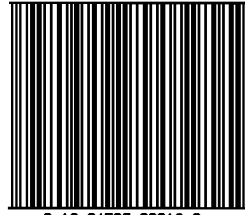


Bar Code J: Interleaved 2 of 5 w/module 10 checksum



01234567890

Bar Code K: Plessey

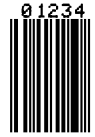


0 12 34567 89012 8

Bar Code L: Interleaved 2 of 5
w/module 10 checksum and
shipping bearer bars



42



01234

Bar Code M: 2 Digit UPC addendum

Bar Code N: 5 Digit UPC addendum

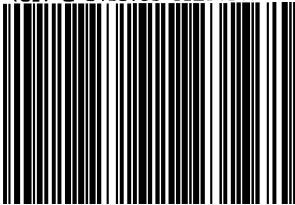


Bar Code O: Code 93



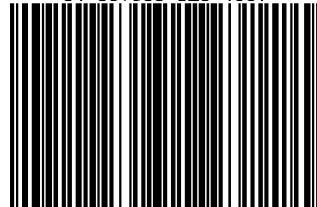
Bar Code p: Postnet

(01) 2 3456789 012345678 9

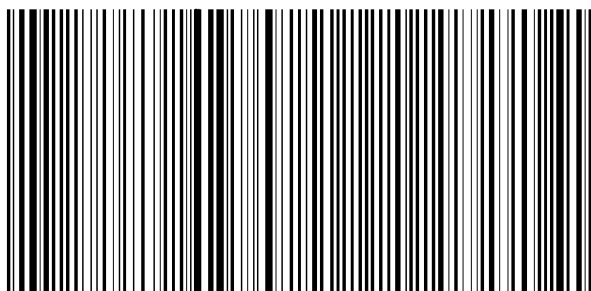


Bar Code Q: UCC/EAN Code 128

34 567890 123 4567



Bar Code R: UCC/EAN Code 128
KMART NON EDI

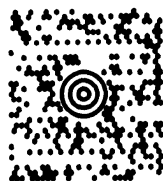


01 10073675029260 11 930420 3202 001800 21 10123456

Bar Code S: UCC/EAN Code 128 Random Weight



Bar Code T: Telepen



Bar Code u: UPS MaxiCode



Bar Code v: FIM



Bar Code z: PDF-417



Bar Code W1c: DataMatrix



Bar Code W1d: QR Code

C

Appendix C

Module Assignments

Memory Module			
Designator	Module Size	Volatile*	Location / Use
A	Future Option	N/A	N/A
B	Future Option	N/A	N/A
D	1024 KB (default size)	Yes	Main PCB SDRAM – user addressable for graphics, fonts, and label formats
F	4 MB	No	Optional Flash Card – user addressable for graphics, fonts, and label formats
Y	64 KB	No	Main PCB Flash – reserved for EFIGS
Z	4 MB	No	Optional Flash Card – reserved for ILPC

*When power is removed from the printer, stored data will be lost.

Print Resolutions and Maximum Widths

Resolutions and Widths				
Model	Printhead Resolution	Maximum Print Width		Factory Default Setting
		Inches	Millimeters	
J693	203 dots/inch (8 dots/mm)	4.09	103.9	4.10

Speed Settings and Defaults

Consult the *Programmer's Manual* for detailed information.

J693				
Function	Speed Range		Default Setting	
	IPS	MMPS	IPS	MMPS
Print	2-8	50.8 – 203.2	6.0	152.4
Feed	2-10	50.8 – 203.2	6.0	152.4
Reverse	2-4	50.8 – 101.6	4.0	101.6

D Appendix D

Menu System Multi-Language Support

This printer provides the user with the ability to download new menu system languages and/or replace the provided translations. A Microsoft® Excel Spreadsheet defines the menu dictionary – the user adds a new language column or modifies an existing column in the spreadsheet, clicks on the ‘Generate DPL file(s)’ radio button and sends the generated DPL file(s) to the printer.

Here are the highlights and restrictions of the feature:

- The printer can register up to 10 different display languages, including EFIGS.
- The EFIGS languages and any additional languages are stored on Module Y: a 64KB Flash Module located on the Main PCB.
- It is okay to download menu files generated for a lesser firmware revision to new firmware – any messages that are not defined are displayed in English.
- For the procedures below, the printer will accept the menu downloads from any available port.
- The language creation programs support Windows® 95, Windows® 98, Windows® NT, and Windows® 2000.

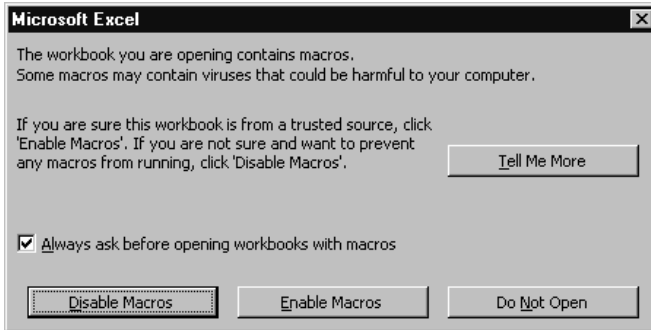
Required Software	Comment
J693 Application Version 3.0 or greater*	Must reside in the target printer. (See Section 4.3.2 for details.)
Microsoft® Excel 97	Must be purchased by user.
Img2dl.exe**	Program used during the process to create DPL file.
Gemmsgxls.xls**	Menu Dictionary

*These software files and programs are available on our web site.

**Pitney Bowes recommends that the Img2dl.exe and Gemmsgxls.xls files reside in the same directory.

Creating a Menu Language:

- 1) Invoke Excel and open the gemmsglst.xls file. Excel opens the file and the following screen appears.



- 2) Click the “Enable Macro” box and the following appears.

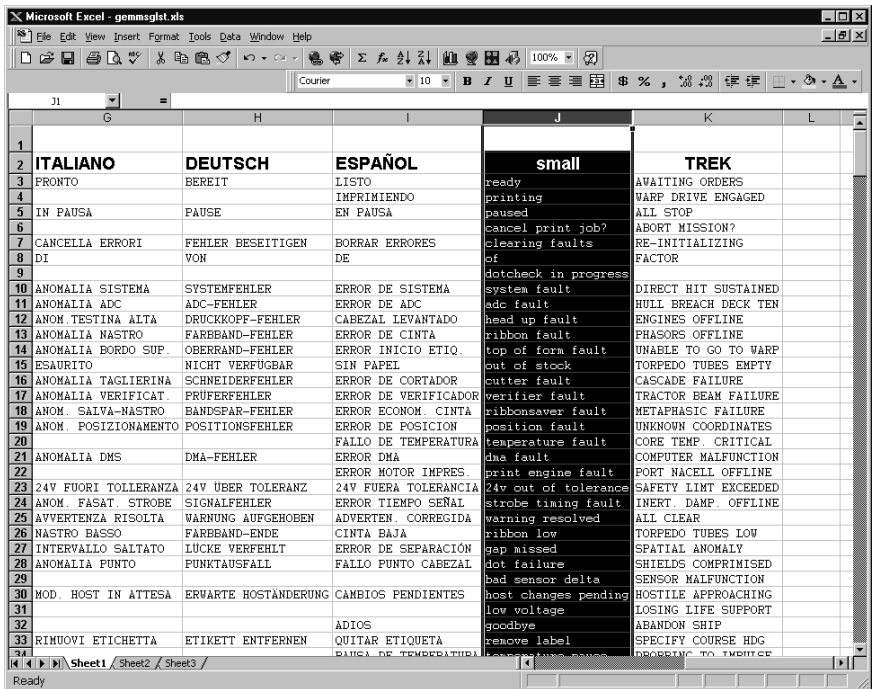
		Generate Source Files		Generate DPL File(s)			
	NID	COMMENTS	MAX	MESSAGE ID	ENGLISH	FRANCAIS	ITALIANO
3	0000	System Messages	20	MID_READY	READY	PRÊT	PRONTO
4	0001		20	MID_PRINTING	PRINTING		
5	0002		20	MID_PAUSED	PAUSED	PAUSE	IN PAUSA
6	0003	1Aa	20	MID_CANCEL_PRINT_JOB	CANCEL PRINT JOB?		
7	0004		20	MID_CLEARING_FAULTS	CLEARING FAULTS		CANCELLA ERRORI
8	0005		10	MID_OF	OF	DE	DI
9	0006		20	MID_DOTCHECK_IN_PROGRESS	DOTCHECK IN PROGRESS		
10	0007	Faults	20	MID_SYSTEM_FAULT	SYSTEM FAULT	DEFAILLANCE SYSTEME	ANOMALIA SISTEMA
11	0008		20	MID_ADC_FAULT	ADC FAULT	DEFAILLANCE ADC	ANOMALIA ADC
12	0009		20	MID_HEAD_UP_FAULT	HEAD UP FAULT	TETE NON VEROUILLÉE	ANOM TESTINA ALTA
13	0010		20	MID_RIBBON_FAULT	RIBBON FAULT	DEFAILLANCE RUBAN	ANOMALIA NASTRO
14	0011		20	MID_TOP_OF_FORM_FAULT	TOP OF FORM FAULT	DEFAILL. DEBUT D'IMP.	ANOMALIA BORDO SUE
15	0012		20	MID_OUT_OF_STOCK	OUT OF STOCK	RUPTURE PAPIER	ESAURITO
16	0013		20	MID_CUTTER_FAULT	CUTTER FAULT	DEFAILLANCE COUTEAU	ANOMALIA TAGLIERIN
17	0014		20	MID_VERIFIER_FAULT	VERIFIER FAULT	DEFAILLANCE VERIFIC.	ANOMALIA VERIFICAT
18	0015		20	MID_RIBBONSAVER_FAULT	RIBBONSAVER FAULT	DEFAILL. ECONOM. RUBAN	ANOM. SALVA-NASTRO
19	0016		20	MID_POSITION_FAULT	POSITION FAULT	DEFAILLANCE POSITION	ANOM. POSIZIONAMEN
20	0017		20	MID_TEMPERATURE_FAULT	TEMPERATURE FAULT		
21	0018		20	MID_DMA_FAULT	DMA FAULT	DEFAILLANCE DMA	ANOMALIA DMS
22	0019		20	MID_PRINT_ENGINE_FAULT	PRINT ENGINE FAULT	DEFAILLANCE MOTEUR	
23	0020		20	MID_24V_OUT_OF_TOLERANCE	24V OUT OF TOLERANCE	DEPASS. TOLERANCE 24V	24V FUORI TOLLERAN
24	0021		20	MID_STROBE_TIMING_FAULT	STROBE TIMING FAULT	DEFAILL. DUREE D'IMP.	ANOM. FASAT. STROE
25	0022	Warnings	20	MID_WARNING_RESOLVED	WARNING RESOLVED	AVERTISSEMENT RESOLU	AVVERTENZA RISOLTA
26	0023		20	MID_RIBBON_LOW	RIBBON LOW	RUBAN FAIBLE	NASTRO BASSO
27	0024		20	MID_GAP_MISSED	GAP MISSED	INTERVALLE MANQUANT	INTERVALLO SALTATO
28	0025		20	MID_DOT_FAILURE	DOT FAILURE	DEFAULT IMPRESSION	ANOMALIA PUNTO
29	0026		20	MID_BAD_SENSOR_DELTA	BAD SENSOR DELTA		
30	0027		20	MID_HOST_CHANGES_PENDING	HOST CHANGES PENDING		MOD. HOST IN ATTES
31	0028		20	MID_LOW_VOLTAGE	LOW VOLTAGE		
32	0029		20	MID_GOODBYE	GOODBYE		
33	0030	Conditions	20	MID_REMOVE_LABEL	REMOVE LABEL	ENLEVER ETIQUETTE	RIMUOVI ETICHETTA
34	0031		20	MID_TEMPERATURE_RAISE	TEMPERATURE RAISE		

(Continued next page)

3) Click On Column J and enter your new language, or modify an existing one.

Tips:

- A) Message Size – When entering new messages, reference the ‘MAX’ column: this is the maximum number of characters allowed for this field. Warnings are displayed when the number of characters is exceeded or when trying to modify the MAX value. Beware that “cutting” and “pasting” fields could defeat this warning system.
- B) Two Line Messages – Some of the message are displayed as two lines. These are indicated in the comment fields.
- C) Comments – This field can be modified with no effect.



4) When editing has been completed, highlight all of the columns you desire to create (more than one language may be selected) by pressing the letter above the column.

5) Press the Generate DPL File(s) radio button. A file will be generated for each of the selected columns and Excel will provide confirmation. (Example: small.ls)



(Continued next page)

- 6) Download the generated files to the printer – one method is the DOS copy command:

```
copy small.ls lpt1: /b
```

- 7) Reset the printer by pressing and holding the CANCEL key for approximately four seconds.
- 8) Verify the operation by printing a Configuration Label (see Section 4.3.2). The new font selection will be printed on the label under SYSTEM INFORMATION / OPTIONAL LANGUAGES or select the new language in the SYSTEM SETTINGS / MENU LANGUAGE in the printer’s menu.

This is the only method to determine whether the download was successful. If the menu system displays the new language selection, but all displayed messages remain in English an error has occurred. Re-check the process. Contact Technical Support if problems continue and be prepared to provide the Gemmsglst.xls and the DPL download file you have created. Other possible error messages are as follows:

Menu Language Error Message	Description
Please select the entire column(s) or the desired language(s), by clicking on the column letter(s)	After pressing the Generate DPL File(s) radio button, the languages to convert were not correctly selected.
Message text may not exceed MAX=xx designated characters for this MID	The entered message exceeds the number of characters specified in column C. You may not modify this number.

Advance File Handling Information

- The standard printer leaves the factory with EFIGS loaded into module Y. At this point, Module Y is LOCKED and will only accept additional Language Downloads.
- After downloading a language update, Module Y is left UNLOCKED until the printer is reset or power is cycled. In this state, Module Y will accept font, image and label format downloads. The module will also honor the Clear Module request. Therefore, following an update it is recommended that a reset be performed to lock the module; otherwise, a software package may ‘Clear All Modules’ thus destroying the new menu language(s).
- Module Y can be UNLOCKED by sending this DPL string: <STX>KpY0.

(Continued next page)

- To restore the factory generated EFIGS image, download the file *832296.01A to the printer. This file is located on our web site. The letter at the end of the file name (e.g., A) specifies the revision. The latest revision will be available on the FTP site.
- Downloading the same language twice will automatically delete the first occurrence, but will not free the memory space. Use the Pack Module feature (see Section 4.1.3) or reload the FIGS file to free the space.
- Deletion of the selected language will set the printer to English.
- The total number of languages that the printer can now accept is limited to 10, but this number is dependent upon the size of each language translation. The translation size will vary with the number of messages that are translated for that particular language. Current complete language files are about 7,000 bytes each but with product growth, the total number of languages is expected to drop to seven.

Glossary of Terms

alphanumeric Consisting of alphabetic, numeric, punctuation and other symbols.

backing material The silicon-coated paper carrier material to which labels with adhesive backing are affixed. Also referred to as “liner”.

bar code A representation of alphanumeric information in a pattern of machine-readable marks. The basic categories are divided into one-dimensional (UPC, Code 39, Postnet, etc.) and two-dimensional barcodes (Data Matrix, MaxiCode, PDF417, etc.).

boot loader The resident program that loads the application from Flash memory, decompresses it into the SRAM, and starts operations.

calibration The process through which sensor readings are entered into the printer for correct sensor function (e.g., detection of a given media) and TOF positioning.

character set The entire complement of alphanumeric symbols contained in a given font.

checksum An alphanumeric error detection method used in many bar code symbologies for informational security.

continuous media An uninterrupted roll or box of label or tag stock media that contains no gap, notch, or mark to separate individual labels or tags.

core diameter The inside diameter measurement of the cardboard core at the center of a ribbon or media roll.

cutter A mechanical device (e.g., rotary or guillotine) used to cut labels or tags following printing.

defaults The functional setting values returned following a factory reset of the printer.

- diagnostics** Programs used to locate and diagnose hardware problems.
- die-cut media** Media that has been cut into a pattern using a press, where the excess paper is removed leaving individual labels, with gaps between them, attached to a backing material.
- direct thermal** The printing method that uses a heat sensitive media and only the heat of the thermal printhead to create an image on the label.
- direct thermal media** Media coated with special chemicals that react and darken with the application of heat.
- DPI (dots per inch)** A measurement of print resolution, rated in the number of thermal elements contained in one inch of the printhead. Also referred to as “resolution”.
- DPL (Datamax Programming Language)** programming commands used specifically for control of and label production in the printer. A complete listing of commands can be found in the *Programmer’s Manual*.
- EFIGS** English, French, Italian, German, Spanish, and other multi-language support as programmed for the printer’s menu system and configuration label.
- fan-fold** Media that is folded and stacked.
- feed speed** The speed at which the media moves under the printhead in non-printed areas and between labels.
- Flash memory** Non-volatile memory (does not require printer power to maintain data) that can be erased and reprogrammed, used to hold the printer’s operating program.
- font** A set of alphanumeric characters that share a particular typeface.
- gap** A space between die-cut or notched labels used to sense the top-of-form.
- IPS (inches per second)** Imperial measurement of printer speeds.
- label** A paper or synthetic printing material, typically with a pressure sensitive adhesive backing.

- label length** The distance from the top of the label to the bottom of the label as it exits the printer.
- label repeat** The distance from the top of one label to the top of the next label.
- label tracking** Undesirable lateral (side to side) movement of the media as it travels under the printhead.
- label width** The left to right measurement of the label as it exits the printer.
- media** Generalized term for all types of printing stocks, including: roll fed, continuous, die-cut, and fanfold.
- media hub** Device in the printer used to support roll media.
- media sensor** An electronic device equipped with photosensors to detect media and the top-of-form on die-cut, notched or reflective media.
- MMPS (millimeters per second)** Metric measurement of printer speeds.
- notched stock** Media, typically tag stock, with holes or notches in the material that is used to signal the top-of-form. The printer must be set to 'gap' to use this media type.
- perforation** small cuts extending through the label and backing material to facilitate their separation. Also referred to as "perf".
- print speed** The speed at which the media moves under the printhead during the printing process.
- reflective media** Media imprinted with carbon-based black marks on the underside of the material, which is used to signal the top-of-form when the 'reflective' sensor is enabled.
- registration** Repeatable top to bottom alignment of printed labels.
- reverse speed** The backward rate of media motion into the printer during tear-off, peel and present and cutting modes for positioning the label at the start of print position.

ribbon An extruded polyester tape with several layers of material, one of which is ink-like, used to produce an image on the label. Also referred to as “foil”.

ribbon wrinkle An undesirable overlapping of the ribbon during the printing process that leads to voids on the printed label. Typically caused by an improper printhead leveling cam adjustment.

roll media A form of media that is wound upon a cardboard core.

start of print The position on the label where the printing actually begins.

tag stock A heavy paper or synthetic printing material, typically featuring a notch or black mark and without an adhesive backing.

thermal transfer The printing method that creates an image by transferring ink from a ribbon onto the media using the heat from the thermal printhead.

TOF (top-of-form) The start of a new label.

void An undesirable blank space in a printed image.

